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MODERN TRANSPORT

"THE TIMES" OF THE TRANSPORT WORLD

NEW FOR MANCHESTER—BURY SERVICE

See Page 6

VOL. LXXXII No. 2126 [Registered at the G.P.O. as a newspaper] LONDON, FEBRUARY 13, 1960 PRICE ONE SHILLING

CURRENT TOPICS

Flag Discrimination

OF the 60-odd countries with which the United Kingdom trades, no fewer than 40 practise flag discrimination in one form or another. Small wonder, therefore, that shipping interests have for long been pressing the Government to take some action to remedy the matter. It so happened that on Wednesday of last week the question came before both Houses of Parliament. Lord Chesham, Parliamentary Secretary, Ministry of Transport, replying to the debate in the Lords, said that the Government did not rule out the possibility of retaliatory measures and the question was under consideration. It was quite clear that of all the difficulties facing the shipping industry flag discrimination was the most serious; it was of much greater importance than flags of convenience. Apart from informal representations the Government had made 74 formal protests in the last 10 years to 31 countries. Some satisfactory responses had been received and in certain trading agreements and commercial treaties non-discriminatory clauses had been obtained. The Government had been seeking greater support from the United States, a country which itself discriminated and took other measures that were not helpful to our shipping. The real trouble was that this set an example to other countries. The Minister of Transport, said Lord Chesham, "took the whole thing up again very firmly when he was in Washington last month," but Mr. Marples told the Commons that these talks were purely informal. "I emphasised," he said, "the contrast between the policies of world trade liberalisation advocated by the United States and her restrictive practices in shipping." The Government expects that continuing talks on the question will shortly be arranged between the United States and the European countries concerned, and it is still hoped to convince the United States of the justice of the case for the British shipowner, especially in the light of growing recognition of the need for economic co-operation among the Atlantic powers.

Record-Breaking Tourist Year

VOLUME of tourist traffic to Britain broke all records in 1959. Even in December, states the British Travel and Holidays Association, 69,140 overseas visitors came, or 13 per cent more than in the same month in 1958. This brings the total number of overseas visitors to Britain in 1959 to roundly 1,390,000—10 per cent more than in the previous year. European visitors during December totalled 32,365, an increase of 9 per cent on the 1958 number. United States nationals arriving as tourists numbered 10,827—12 per cent more than the same month in 1958. This brought the total of U.S. visitors to Britain during the year to 352,780, an increase of 8 per cent. There were more visitors from almost every country in 1959; the largest increase for the year was from Belgium (25 per cent), then Italy (17 per cent), Denmark (15 per cent) and Sweden (13 per cent). Germany and Holland each registered 12 per cent increases, and Norway and Switzerland 11 per cent. Final figures for the number of Commonwealth visitors in 1959 are not yet available, but the Association estimates a total of approximately 305,000.

Manufacturing Success

IN his statement to shareholders of Leyland Motors, Limited, Sir Henry Spurrier, the chairman, had a success story to tell, whether in connection with military tracked vehicles, freight models from Leyland and its associates or buses, topped by the remarkable Atlantean, but backed by such orders as 200 for Cuba, 150 for Ghana, 250 for Bombay and Calcutta. Nor is the story only of exports, diversified and important though they are. Leyland accounts for 64 per cent of new buses on order for British municipalities; recently an agreement has been entered into for supplying Leyland units to London Transport for Routemaster buses. There is ample evidence, said Sir Henry, now to indicate that a period of prosperity is slowly but steadily replacing trade recession in most countries. "As commercial vehicle manufacturers we are asking ourselves whether this upsurge in demand is likely to continue, and if so for how long. I believe, personally, so far as Great Britain is concerned, that we can look ahead with confidence, at least for the period that the present Government may remain in office. The dismal threat of further nationalisation of industries is behind us, and we can now plan the future modernisation and development of our factories with more confidence, and in the knowledge that vital and continued expansion of our overseas organisation and trading is not likely to be hamstrung and stifled by the dead hand of Government control." There is an optimistic spirit about in the Leyland organisation, and very definite signs of even greater enthusiasm and energy amongst executives, staff and workpeople alike. Regular meetings with representatives of all ranks discuss aims and ambitions openly and candidly. Despite favourable trade, it is always recognised that the British manufacturer has the never-ending task of having to beat foreign competitors to it.

LEADING FEATURES IN THIS ISSUE

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Ford on Merseyside

IN a recent statement, Sir Patrick Hennessy, chairman, Ford Motor Co., Limited, said that last year, with the coming into full operation of the company's new assembly building at Dagenham, the first great postwar expansion and modernisation scheme was completed. The basis of that scheme was that Dagenham should remain the centre of manufacturing operations with other Ford factories at Southampton, Leamington, Langley, Basildon, Woolwich, and so on. Already, however, rapidly increasing markets at home and abroad and the increasing popularity of the company's products have taxed production capacity to the limit, and indicated that a further substantial expansion of car production was required as soon as possible. The company had derived its greatest strength in the past from the unrivalled location on the Thames of its comprehensive and closely integrated production facilities. It was natural therefore, on purely economic grounds, that it should seek to relate future development to such a plan. However, in anxiety to help with unemployment and to support Government policy for the steering of new industrial development into areas of more-than-average unemployment and subject to the successful outcome of discussions with the Board of Trade, Sir Patrick said that it was the intention to place major expansion of Ford car production on Merseyside. An appropriate site had been found at Halewood, to the south-east of Liverpool, and negotiations for its purchase were in an advanced stage. Part belonged to the British Transport Commission and part to the Liverpool Corporation. In the course of negotiations every assistance and encouragement had been received from the city officers and most cordial relationships established for the future. To the British Transport Commission also the company was indebted for prompt and efficient handling of requests; it was looking forward to mutually profitable association in the future concerning the handling of the heavy additional goods traffic which was inherent in the decision to move to Merseyside. On the Halewood site the company intended to build without delay an integrated car body plant to employ about 8,000 in the production of 200,000 vehicles a year. In the first instance factory buildings substantially exceeding two million sq. ft. in area would be erected and equipped at a cost estimated to exceed £25 million, and as the first stages were completed there would be further developments.

Great Central History

RAILWAY history has grown immensely in popularity since the days when E. T. MacDermot produced his monumental official volumes on the Great Western Railway; recent literature has been of a high standard but on a lesser scale. This month, however, the Locomotive Publishing Company has issued (at 35s.) what is to be the first of a trilogy in the grand manner on the Great Central Railway. Thus, in sumptuous form, the student is at last able to read the results of George Dow's painstaking and comprehensive researches. This long-awaited work promises nothing but delight to the reader; taking the story of the Manchester, Sheffield and Lincolnshire Railway and its predecessors from 1813 to 1863, it whets the appetite for more at a time when the fruits of the company's enterprise in extending to London and taking the title Great Central have been a subject of some controversy. As is pointed out in a reminiscent foreword by David R. Lamb, the company did not content itself with mere material matters, from the new port of Immingham to the gaining of traffic from its competitors and excursions into the novel arts of publicity; its higher-grade education scheme has had lasting effects in the sphere of training for promotion in transport. It is gratifying that a busy railway officer can engage on a research of this sort; Mr. Dow's duties with the erstwhile London and North Eastern Railway certainly led him to these pleasant paths, but the execution of his task appears to have been exemplary and sheds new light on various matters, including George Stephenson's views on traversing the Peak District by rail. The further volumes will be awaited with equal, if not greater, interest.

Ship Canal Engineer

JUST over 50 years ago there died Sir Edward Leader Williams, whose name is inseparably linked with the Manchester Ship Canal. Born in 1828 at Worcester, he was the first of 11 children. After receiving a private education, Edward was apprenticed to his engineer father. Until 1846 he worked for the River Severn Commission, and then, under James Cubitt, on the construction of the Great Northern Railway. In 1856 young Williams was appointed to the River Weaver Trust, and from that time onwards devoted himself to works for inland navigation. He became a member of the Institution of Civil Engineers in 1860. Later in the century, when a provisional committee was considering the Manchester Ship Canal project, Williams was one of two engineers to be consulted. The proposals which he put forward—to use the tidal channel of the Mersey as far as was practicable, and then to cut a canal with four great locks—were accepted. At the same time he was appointed chief engineer. After due deliberation a start on the great undertaking was made in 1887, the work being divided among a number of contractors. Queen Victoria formally opened the canal seven years later. It transformed the cities of Manchester and Salford into great inland ports over 30 miles from the sea, accessible to vessels of 15,000 tons. The Manchester Ship Canal involved 24 miles of excavated cutting, with a minimum depth of 28 ft. and a width, at the sandstone bottom, of 120 ft. Williams's achievements were acknowledged by the honour of knighthood. In 1905 he became consulting engineer and at that time he was elected a vice-president of the Institution of Civil Engineers, in which capacity he served until 1907. His death occurred three years later. The very successful undertaking he did so much to establish has a board on which Manchester Corporation has a majority; incidentally it works 58 miles of railway and 52 miles of the Bridgewater canals.

Illogicality

EXTREME casuistry must seem to the outsider the dominating factor in the determination of the executive of the National Union of Railwaymen to call a strike for February 15. It is unfortunate and illogical that differing policies in the three railway unions should have produced a situation where the future volume of all railway employment is jeopardised by the threat of a strike or its actuality—and that just at a time when traffic was beginning to recover from the setbacks of 1958. After Mr. C. W. Guillebaud, chairman of the independent committee of inquiry into railway wage levels and differentials, had promised a report not later than the week beginning February 29 (instead of in April) and Sir Brian Robertson, chairman of the British Transport Commission, had followed that by arranging to make an offer within seven days, it was illogical and unreasonable of the N.U.R. to persist in saying it must have the money now. A strike now would postpone the day of higher railway wages—and perhaps make them virtually impossible—far beyond the date in March which would see the interim increase under these proposals. The N.U.R. will be breaking its agreement to await the outcome of the Guillebaud report (which is, to say the least, an ungrateful action when it is offered benefits under it backdated as from January 11) and will also be breaking its agreement to follow the negotiating machinery through its course. There is no justification for withdrawing railway shopmen. Breaches of agreement are a poor foundation on which to start an industrial struggle, although in the present case the public—and the Commission—have been willing to attribute these lapses to impatience and frustration. Refreshingly, this is an impasse for which the employer cannot be blamed. In fact, the B.T.C. has done everything possible to meet the men. At the moment of writing the N.U.R. executive seems determined to damage the true interests of its members and to inflict irreparable loss on the undertaking railwaymen serve.

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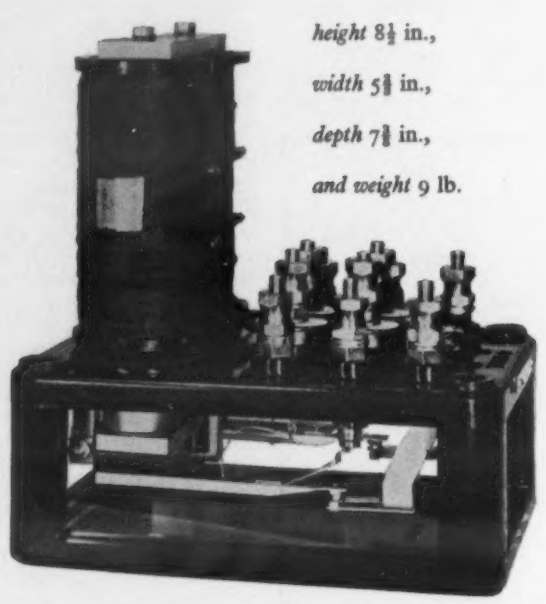

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MODERN TRANSPORT

Published Every Friday

RUSSELL COURT, 3-16 WOBURN PLACE, LONDON, W.C.1

Telephone Number: TERminus 0303 (3 lines)
Telegraphic Address: Transpubco, Westcent, London

ANNUAL SUBSCRIPTIONS
BRITISH ISLES, 47/6; CANADA, 45/-;
ELSEWHERE ABROAD, 47/6
payable in advance and postage free

The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements.

★

Government and Railways

REGARDING the British Transport Commission things seem to be stirring in Government circles and it seems opportune to consider the problems involved. It is now six months since the Commission indicated the need for a reconsideration of its financial structure. The appeal was made in a White Paper (Cmd. 813) containing a re-appraisal of the modernisation plan in the light of economic and technical developments in the four years since its inception, and having regard also to future trends. The plan originally envisaged an outlay of £1,240 million, of which, incidentally, about half would in any case have been required for normal maintenance and replacements. Late in 1957 the plan was re-assessed at £1,500 million, mainly because of an all-round increase in prices. Over and above this, further expenditure was estimated as necessary, to the tune of £160 million, on additional equipment of freight vehicles and developments at depots not hitherto contemplated. The re-appraisal envisaged a greater concentration of expenditure in the years 1959-63 in order to realise the benefits of modernisation more quickly. It was estimated that total investment expenditure, then running at about £180 million a year, was likely to be from £190 to £210 million a year for the remainder of the 1959-63 period. By concentrating more expenditure in this period it was hoped to secure the cumulative benefits more quickly. By 1963 it was anticipated that the Commission's gross receipts would cover working expenses and leave a working surplus of between £50 and £100 million.

A Grim Outlook

THIS was the picture six months ago. But there was a warning that the charge to revenue account in respect of central charges (exclusive of interest on deficit advances) would rise by 1963 to about £85 million. In the most favourable circumstances, therefore, the net surplus would be a small one; otherwise a deficit was to be expected. Since the White Paper was issued circumstances have in fact been unfavourable, although in the last few weeks there have been some favourable trends in traffic, which unfortunately will not have been encouraged by strike threats. The chairman of the Commission has stated that the results for 1959 are likely to be better than in 1958; nevertheless, the deficit will make a further drain on permissible borrowings, and the £400 million available is likely to be absorbed within the next 18 months. Moreover, whatever the outcome of the present lapse in labour relations the Commission will be faced with a considerably increased wages bill which will seriously affect the financial position. Indeed, it has been stressed that the co-operation of the staff is essential to the success of the plan—a fact which is fairly self-evident. Dealing with the financial structure of the Commission the White Paper stated:

> The central charges of the Commission are large in relation to the working surpluses which would be regarded as acceptable by the various agencies of public control, yet these central charges are both fixed and inflexible, consisting as they do mainly of interest on borrowings. In good years and in bad years this interest must be paid in full; there is no equity capital. Fluctuations are inescapable in a business with a high proportion of fixed costs, especially when adjustments of charges take as long as they do. The Commission, as a newly constituted undertaking, started without any reserves available to take the shock of fluctuations in their financial fortunes and they have not since been allowed to build up any such reserves. If the Commission are to be put in a position to pursue consistent policies on a long-term basis, it seems essential that in due course their financial structure should receive consideration afresh.

No specific recommendation was made by the Commission and so far no indication has been given by the Government of steps contemplated in this urgent matter.

Some Reported Proposals

OPPORTUNITY for some definite statement came on July 30 in a House of Commons debate on the Commission's 1958 report. The fact that a General Election was impending may well have influenced the situation. Be that as it may, the then Minister of Transport contented himself with saying that the Government had taken the judgment of Sir Brian Robertson and his colleagues on the course of the railway industry and supported them in what they thought was right. Mr. Harold Watkinson was more definite when he went on to say that the Government "did not intend to throw the industry back into the melting pot with some great attempt to denationalise the whole thing, but to decentralise and make it more efficient." Reports last weekend indicate that some action is at length being taken and with the prospect, if all accounts are true, of a re-organisation decidedly more drastic than that contemplated in July last by Mr. Watkinson. The whole question is said to be under consideration by a Ministerial study group, including Mr. R. A. Butler and Lord Mills. Detailed proposals now being examined are stated to include (shades of 1920!) full nationalisation of the railways with the Commission integrated as part of the Ministry of Transport; state ownership to be concentrated on the running of the railways as a separate entity with the "hiving-off" to private enterprise of all ancillary operations and assets (e.g. docks and harbours, waterways, hotels and catering); conversion of the Commission into a State holding agency under the Ministry of Transport on the lines of the Post Office, leaving actual administration to the regional boards, with London Transport integrated into a separate body; and selling all land and buildings not required for operational use, a process, incidentally, in which the Commission is already engaged, subject always to its statutory liabilities and the fact that it is unable to secure the full commercial benefits of estate development. Implementation of some or all of these proposals would, it is suggested, enable the Government to tackle the question of future State subsidies primarily from the viewpoint of public service.

Government Must Decide

FRANKLY, we do not like any of them. In the light of prevailing conditions they border on the fantastic, but in view of experience in 1952, with the break-up of the Commission's profitable road haulage undertaking and the resultant destruction of rail and road integration, there is a real danger that anything may happen. Can one picture the immense organisation of British Railways being administered by a Government Department with the ever-present hindrance of question and answer in Parliament and of the full blast of party politics, to which transport in general is already peculiarly susceptible? And why "hive-off" (blessed word of the back-benchers!) to private enterprise ancillary undertakings whose administration the Commission has definitely improved and whose revenue potentialities are therefore growing daily? Moreover, these undertakings are natural adjuncts to the railways, from whom severance might well prove serious. Again, why should private enterprise, rather than the community, enjoy the fruits of the profitable branches of the Commission? These are some of the questions which immediately come to mind regarding proposals which appear to arise from sheer lack of experience and of technical appreciation of the situation. It is to be hoped that no step will be taken without prior consultation with the Commission and then with closer observance of its advice than was the case in the 1952 debacle. First it has to be decided whether the Commission is to be treated as a purely commercial concern, with all the freedom associated with that connotation, or whether it is a public service: at present it is suspended gingerly between the two. It is for the Government to decide whether railways are essentially a public service and how deficits are to be avoided. Should operations be integrated with road transport, say under voluntary agreement with hauliers? How far should regional board responsibilities go; should they have responsibility for all forms of transport so that all may be used in the best interests of the community? These questions emphasise the urgent need of a proper public inquiry on the grand scale into our transport difficulties if we are not to drift into worse troubles.

NEWS SUMMARY

FROM February 7 the new 6,300-ton ship of the Zeeland Steamship Company, *Koningin Wilhelmina*, has been operating in the day service between Harwich and Hook of Holland. Last week it was demonstrated to British shippers and travel agents and the Mayor of Harwich on February 3 unveiled a plaque to mark its first call at the Essex coast port. Description on page 6.

British Travel and Holidays Association announces that 1959 was a record year for overseas visitors to Britain.

The Birmingham Railway Carriage and Wagon Co., Limited, has denied takeover rumours. Discussions concerning some diversification of the company's products are stated to be in a preliminary stage.

The C.W.S. Bank arranged a loan of £1 million to the N.U.R. against some £5½ million of securities to assist the union in providing strike pay.

Pakistan International Airlines is to commence operation of jet aircraft next month when a Boeing 707 obtained from Pan American World Airways on a trip-lease basis will operate weekly between London and Karachi.

Mr. C. W. Guillebaud on February 8 advised a meeting of the Trades Union Congress and leaders of the three railway unions that he hoped to complete the independent wages review in the week beginning February 29—or a month earlier than expected. It was hoped that this might enable the National Union of Railwaymen to withdraw its strike notice, but after a meeting of the executive on February 9 it was stated that the union still wanted the money at once.

ROADRAILER EXPERIMENTS

Background to the Ro-Railer of 1930-32

By a Special Correspondent

IN the January 23 issue of MODERN TRANSPORT there appeared an editorial note on the subject of the B.T.C. Roadrailer experiments in which the opinion was expressed that the experiments to be carried out with this type of vehicle might well revolutionise the earning capacity of the railway system and lift it out of the red. Very properly the Karrier Ro-Railer tested by the London Midland and Scottish and London and North Eastern Railways some three decades ago was recalled.

The following reminiscences are offered in the hope that the story of the promising experiments of 30 years ago may be preserved and that credit may be given to those responsible for encouraging and developing a vehicle with all the potentialities of the system with which British Railways is now experimenting. The idea had often been proposed in previous years and in a few instances had been put into practice, but abandoned.

Prototype Karrier Ro-Railer on test, showing front axle railborne and rear axle carried on road tyres at the re-railing ramp

Operator's Suggestion

A suggestion that a vehicle capable of running both on road or rail might be acceptable to the railway companies came, in 1928, from the then chief general superintendent of the L.M.S.R., the late Mr. C. R. Byrom, who said he would like such an omnibus to enable him to meet competition from the road, which was then becoming a serious menace to the railways. This remark reached the L.M.S. road motor engineer, who thought there should be no great difficulty in producing such a vehicle, passenger or goods, fitted with two sets of wheels which could be quickly adjusted to carry the vehicle on either road or rail.

He discussed the idea informally with one of Karrier's leading men, Mr. A. H. D. Moncrieff, and some rough preliminary sketches were made on the back of a menu at Frascatis. They looked good to both persons, and proper drawings of a possible wheel-changing device were then made. Karrier's managing director, Mr. R. F. Clayton, agreed to build an experimental vehicle, using the popular 2-ton CY goods vehicle as a basis.

Mr. J. H. Follows, vice-president of the L.M.S. in charge of operation, gave his support to the idea and on his instructions the branch line between Huddersfield and Mirfield was made available for trials. These went on for some months during which many improvements were made to the wheel-changing mechanism by Karrier's designers, notably Messrs. Dean-Averns and Meeke.

Successful Trial of Prototype

When the vehicle appeared to be capable of doing all that could reasonably be expected from it, Mr. Follows was asked to visit Huddersfield and see the first Ro-Railer at work. This he did, early in 1930, if memory serves one correctly. The demonstration was carried out in a snowstorm; but in spite of this and the fact that the vehicle was fitted only with a rough test body the vice-president was obviously impressed favourably, encouraged, perhaps, by the enthusiasm of the Karrier chairman, Mr. H. F. Clayton; and shortly afterwards he authorised expenditure to cover the cost of construction of a Ro-Railer omnibus.

The manufacturer rose nobly to the occasion and overcame the many problems raised by the need to meet both railway and Ministry of Transport regulations for such a vehicle. The M.o.T. inspector proved sympathetic when he certified the vehicle at Wolverton, where it had been sent for a few final railway requirements to be fitted.

The details of the vehicles were, of course, fully described in the technical press at the time. It may be recalled that it had a 26-seat single-deck body some eight to 10 inches below rail top level. The requirements could also be met by portable wooden ramps in unexpected circumstances.

Trials

After the vehicle was delivered to the L.M.S.R. it ran an extensive series of trials during the latter part of 1930 on the Redbourn—Hemel Hempstead branch line; going daily from Watford road motor depot to Redbourn by road, then to Hemel Hempstead by rail, off on to the road, round the houses and back on rail to Redbourn, twice repeated perhaps, and then home by road to Watford. Several weeks of this routine, during which it was ridden in by many railway officers, showed up no serious defects or shortcomings, so it was decided by the L.M.S.R. higher management to give a public demonstration of the Ro-Railer, which was said at the time by one of the leading technical journals to be "an innovation fraught with very great possibilities and of a system applicable to any type of motor vehicle, either passenger or goods and to tractors and truck trailers. No special equipment is required and Ro-Railers can be attached to any train and detached and proceed as a road vehicle as required." All of which was demonstrably true; and it is worth noting that the vehicle was fitted with sanding gear, buffers and lamp brackets which enabled the railway headlamp code to be complied with.

Expectata dies aderat and on January 22, 1931, an all-dining car special was run from St. Pancras to Redbourn. It was specially fitted up with a loud-hailer system throughout. The guests on the train included Government and War Office representatives, officers from most British and many overseas and foreign railways, and a large number of journalists of the world's popular and technical press. The principal host for the L.M.S. was Sir Josiah Stamp, who broadcast down the train to all on it about the demonstration they were about to witness, describing it, if memory serves, as an interesting experiment.

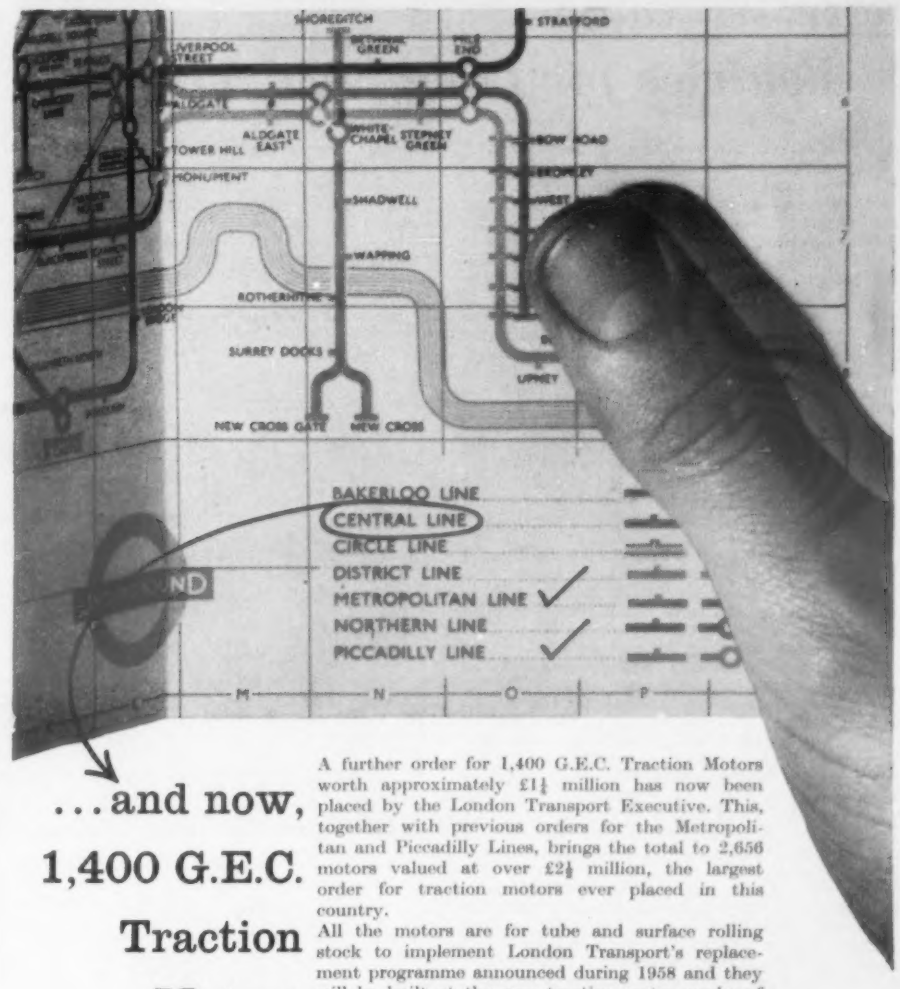
The Ro-Railer bus in L.M.S. service between Welcombe Hotel, Stratford-on-Avon, and Blisworth in April, 1932. Railway buffing and coupling gear used in the 1931 Harpenden line demonstration were at this time removed

Demonstration

On arrival at Redbourn the special drew up beside the Ro-Railer which, to the relief, it may be supposed, of the road motor engineer, had arrived safely by road, and, looking rather insignificant beside the main-line locomotive, was standing on the right spot straddling the rails ready to show off its tricks and capabilities. Well, indeed, did it show off in the capable hands of Messrs. Messeter and Burchell of the r.m.e. department and a regular guard from the traffic department, doing several round trips until the many interested guests had tested it fully laden over many miles by road and rail.

The demonstration attracted literally world-wide attention and requests for further information were received from all quarters, including many railways in the U.S.A. The reception by the popular press was almost embarrassing: *The Times*, cautiously, "Railwaymen regard favourably the prospects of

(*Continued on page* 9)



...and now, 1,400 G.E.C. Traction Motors for the Central Line

A further order for 1,400 G.E.C. Traction Motors worth approximately £1¼ million has now been placed by the London Transport Executive. This, together with previous orders for the Metropolitan and Piccadilly Lines, brings the total to 2,656 motors valued at over £2¼ million, the largest order for traction motors ever placed in this country.

All the motors are for tube and surface rolling stock to implement London Transport's replacement programme announced during 1958 and they will be built at the new traction motor works of the G.E.C. at Dudley Port, Staffordshire.

The 1,400 motors are of a new design and will have a continuous rating of 60 h.p. at 66% field. Previously 760 motors for the Piccadilly Line and 496 for the Metropolitan Line have been ordered and these will operate at 80 h.p. at 66% field and 68 h.p. at 60% field respectively. With the completion of these orders G.E.C. will have supplied nearly 6,000 railway traction motors to London Transport since 1925.

G.E.C. traction motors

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LORRY—BUS—COACH

Vehicles for Long Steel Traffic

APPLICATIONS by two large operators for extra vehicles for the haulage of long lengths of steel from the Tees-side area were partially successful when, at resumed hearings, the Northern area Deputy Licensing Authority, Mr. G. W. Duncan, granted two long articulated vehicles to Siddle C. Cook, Limited, Consett, and two articulated vehicles to H. L. Walker, Limited, Thornaby-on-Tees. At the opening of the application in January, the deputy authority read a letter received from Dorman, Long and Co., Limited, which stated that it was not its policy to attend such inquiries, and, in any case, it had arranged with B.R.S. to supply its needs as far as long length steel was concerned. The application proceeded without supporting customer evidence, and the company alleged that to its knowledge, B.R.S. had no long length vehicles licensed in the area, and had not applied to have any based in the vicinity. The application was adjourned, at the request of the B.T.C., who were objecting, to enable the mass of figures produced in evidence to be analysed.

At the resumed inquiry at Stockton, last week, Mr. Cook, managing director of the applicant, contended that his customers had been "got at" by British Railways and were not prepared to send witnesses lest it prejudiced negotiations which were taking place concerning the cost of constructing sidings, in the case of one customer, and the cost of carrying out a large order for delivery, in the case of another customer. Counsel for the B.T.C. submitted that there was no prima facie case to answer, but Mr. Duncan said there was evidence of some need, and said he was prepared to grant two vehicles. The application by H. L. Walker was supported by a letter from Dorman, Long which stated that the production of steel in long lengths was becoming more common and it would be of advantage if ordinary hauliers could, on occasions, when the need arose, carry such material on convertible vehicles. In a long decision, Mr. Duncan again said that he was satisfied that a case "of some sort" had been made, though he had no evidence before him of the need to carry long lengths of steel. Bearing in mind that hauliers who were in the long length steel haulage business—and he included the railways and B.R.S. among them—required protection, he felt that the only grant he could make was for two vehicles of normal type not exceeding 25 ft. in length and non-convertible.

Old Trolleybuses for Spares

BRADFORD is proposing to buy six secondhand trolleybuses from Doncaster Corporation at a cost of £720. The vehicles would be useful for spares. Preparatory work on a new trolleybus route to the Holme Wood Estate has been completed. This route is a spur from the main Wakefield Road via Knowles Lane route.

Y-Staircase Buses Again

TWIN staircases and an enlarged circulating area are featured in five Leyland Titan buses shortly to be placed in service by Morecambe and Heysham Corporation Transport Department and Baxter's Bus Services, Limited, Airdrie. They will have front-entrance type bodies specially designed by Massey Brothers (Pemberton), Limited, Wigan. The design aims at providing increased circulating space for passengers at the foot of the staircase which has a Y-formation with two branches leading to the upper saloon. The most effective part of the design lies in the positioning of the staircase opposite to the front entrance door. Many buses with a front entrance are short of circulating space at the bottom of the staircase and the conductor often finds himself in the way of the passengers. On the new bus there is a space between the rear of the driver's compartment and the staircase where the conductor can stand without obstructing the driver's view of the front entrance or the flow of passengers. Three buses of this design are being built for the municipality and two for Baxter's. The Morecambe buses are 64-seat Hybridge models while those for Baxter's are 56-seat lowbridge type.

Three B.R.S. Continental ferry service trailers on a barge on a Venice canal. They were bound from Hanworth, Middlesex, to San Polo with antique furniture and their route lay via Belgium, Germany and the Brenner Pass

Bulk Milk Collection Goes Ahead

DURING 1959 considerable progress was made in the development of bulk collection of milk ex farms in Scotland. Group schemes are now in operation in the counties of Angus, Ayr, Fife, Kirkcudbright, Lanark, Stirling and Wigtown. Eight private haulage contractors provide road tankers, while the Milk Marketing Board provides four. So far 166 farm tanks have been installed; 378 schemes are outstanding.

Yelloway and Easter Duplication

UNLIMITED Easter duplication on the Yelloway Rochdale—Cheltenham express service was opposed by local excursion operators and British Railways at Manchester. Mr. Hubert Allen, general manager, said that from May 1 to October 30 the service ran from Rochdale to Torquay without restriction as to duplication, but during the winter it operated only between Rochdale and Cheltenham, connecting with Associated Motorways. Substantial numbers of booking had been refused each Easter since the grant of the licence in 1953. The chairman of the North Western area Traffic Commissioners, Mr. F. Williamson, said the service was of a kind that had always been subject to limitation by the Minister, to protect the railways, but they could not ignore the experience of witnesses who had travelled by train last Easter in great discomfort. Decision would be reserved, but Yelloway was entitled to some easement.

Leaking Tanker Charge

THE area where a leaking tanker holding 3,200 gallons of petrol had been left unattended had to be sprayed with water, it was stated in Sheffield on February 8. The driver, Dennis Vernals, of Pearl Street, Sheffield, pleaded not guilty to leaving the vehicle unattended except in an approved place. He was fined £2.

Atlantean Coaches to Edinburgh

IT is planned by Ribble Motor Services, Limited, to introduce its Leyland Atlantean double-deck coaches on the Edinburgh—Liverpool route in early summer and it has made a survey of the Dalkeith—Carlisle route. Co-operation is being sought from local landowners and county authorities to have overhanging trees cleared.

C-Licence Worker in Wage Appeal

DECISION has just been given in writing by the Industrial Court on a dispute referred to it and heard last August concerning the failure of a C-licensee to pay holiday remuneration due to an employee who left before taking a holiday. The award is No. 2740. The employee maintained that, having worked from September 2, 1957, to May 30, 1959, he had been employed for the qualifying period for holiday or holiday remuneration, viz. May 1, 1958, to May 1, 1959, plus one month over. He gave notice to leave on May 30, having previously arranged to take his holiday from July 4 to 18. The employer did not dispute that if the claimant's construction of the wages order RH(66) was correct, the holiday pay was due. The court has awarded two weeks' pay, plus one-sixth of one week's pay for the month of May, as prescribed in the order.

Traffic Committee Set Up by R.H.A.

IN view of the anxiety felt by hauliers at the increasing number of restrictions on the loading and unloading of commercial goods vehicles, the Road Haulage Association has set up a national traffic committee. Members of the Association are being asked to report news of bans in their own districts and where appropriate to take action locally.

One in Three Overloaded

MORE than one in every three lorries stopped in road checks in Nottinghamshire were found to be overloaded, the county chief weights and measures officer revealed at a recent meeting of the County Council. Of 269 vehicles stopped 173 were weighed and 106 prosecutions followed. Some vehicles restricted to 20 tons were found to weigh over 25 tons.

Newcastle Interchange on Coach Services

LANCASHIRE to London express services, operated by North Western Road Car, and Midland Red, jointly, and by Yelloway Motor Services, will in future use the Birmingham—London motorway following a grant by the North Western area Traffic Commissioners, subject to approval in other traffic areas. Mr. F. D. Walker, for the B.E.T. companies, said that in order that no facilities previously offered should be lost to the public by the deviation of route, they also sought to co-ordinate these services with the Scout Motor Services—Standerwick joint Lancashire—London express services, by introducing on their licences new picking-up points and through fares, based on an interchange of passengers at Newcastle-under-Lyme, to serve places off the new line of route. Mr. P. Kershaw, objecting for British Railways to the Scout—Standerwick application, said one of the results would be the introduction of a new direct express road service between Blackpool, Preston and Rugby. After an undertaking by Mr. Walker that Rugby would not be advertised as a destination, or through fares shown from Blackpool and Preston, the objection was withdrawn. (Scout and Standerwick have applied to co-ordinate their joint London services with the joint North Western—Midland Red services over the present common section.)

Bus and Coach Developments

On February 8 London Transport Country Buses introduced Route 809 operating on weekdays between Stevenage (Bus Station) and Pestcotts via Bedwell Crescent and Six Hills Way. Other services in Stevenage have been modified to give better facilities to and from the Town Centre in peak hours.

The British Coach Rally has been retitled the Brighton Coach Rally and will take place on April 23-24 as originally planned. It will be organised by Mr. J. Fielder on behalf of the Brighton Corporation Entertainments Department. Entry forms and all other information is obtainable from the organising secretary at 3 Fleet Street, London, E.C.4.

Glasgow Corporation proposes a new bus service between Dalmarnock and Dalmuir West covering in the main roads served by tram route 1.

Charles W. Banfield, Limited, is applying for licences held by Julius and Lockwood, Limited, and Ansell's Coaches, Limited, which are already associated with the group.

BRITISH ALUMINIUM

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Over the course of the past three years Johannesburg Municipality has been changing over from trams to buses to fulfil their modernization programme.

The new 69 seat double-decker buses, built by Bus Bodies (S.A.) Ltd, are remarkable for their light weight. External and internal panelling and many structural members are built from BA sheet and sections. This extensive use of aluminium reduces the gross weight of the vehicle by half a ton.

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AP398A

LOOKING INTO THE FUTURE

Inventions and Possibilities

*By Sir WILLIAM BLACK, Chairman, A.E.C., Limited**

SCIENTIFIC and technical developments are increasing in tempo, and it would indeed be a wise man who would say what fundamental changes might occur in the next 20 years. In one of my spare time jobs, I come in close contact with much scientific development, and some of the devices which are currently occupying our attention can have appreciable impact on the bus industry.

To mention a few, the Bacon fuel cell is creating a tremendous amount of interest and should it fulfil the highest expectations of its protagonists, it may well be that the omnibus of the future will not require an engine, either diesel or petrol, as we now envisage it. Some day, the scientist will find he can economically produce hydrogen and mix it with oxygen, which is already freely and abundantly available. He will go on to create electricity without going through the present somewhat laborious process.

Fuel Cell

For the benefit of my scientific friends, the following is what the boffins say of these fuel cells:

> Electro-chemical devices burning vapourisable fuel, and generating direct current; comparable with primary batteries, except that electricity may be drawn from them so long as the fuel supply is maintained. When the fuel gas is hydrogen, there is a possibility of recharging the cell so that it becomes in effect a storage battery. In the case of the hydrogen cell the exhaust is pure water. Long shelf life, for in the quiescent condition there is nothing subject to rapid deterioration. Good tolerance of extreme conditions. Good development potential for all purposes, including traction. Possibility of space and weight economies by liquid oxygen and liquid fuel gases. No reason to suppose liquid gases any less readily handled in future than petrol is now. In association with d.c. motors for traction, flexibility of operation and avoidance of gearbox; quietness and bland exhaust.

Hovercraft

Then the Hovercraft. Who knows in what direction that will develop? It is certainly much more than a fascinating toy—a kind of frictionless vehicle, travelling on an air cushion contained in a jet curtain, substantially eliminating rolling resistance; probably unlikely to replace the present forms of road transport, but very attractive over rough going, subject, of course, to certain limitations. In its present form of development it is likely to become very useful as a personnel carrier for tough jobs over rugged terrain; it can take in its stride snow, ice and rough trackless country, probably at speeds of 60 m.p.h. or more. Prince Philip recently successfully piloted the prototype with no previous tuition. He is, of course, a very competent pilot, but the controls are essentially simple.

Gyreacta

Many people in this room must have heard of the Gyreacta which, while it does not eliminate the engine, at least claims to reduce by at least 50 per cent the power required. The basic idea of the Gyreacta is that by using a flywheel it will store energy which can be called on for acceleration. Energy can also be pumped back into store when the vehicle is decelerated.

One application of the Gyreacta under consideration is an omnibus, and naturally we are meeting difficulties. Perhaps I can deviate for a moment to mention two of the snags that have been struck: In the first place, the device incorporates a flywheel running in a vacuum, and at the moment a 200-lb. flywheel, running at about 15,000 r.p.m., has no perceptible loss of speed for days when the propellant is turned off. However, such is the gyroscopic effect of a flywheel revolving at this speed that should the machine run over a humped-back bridge it is quite likely to remain airborne for a sufficient length of time so that when its wheels again make contact it might shoot off in quite a different direction than was intended by the driver. Quite a minor snag that!

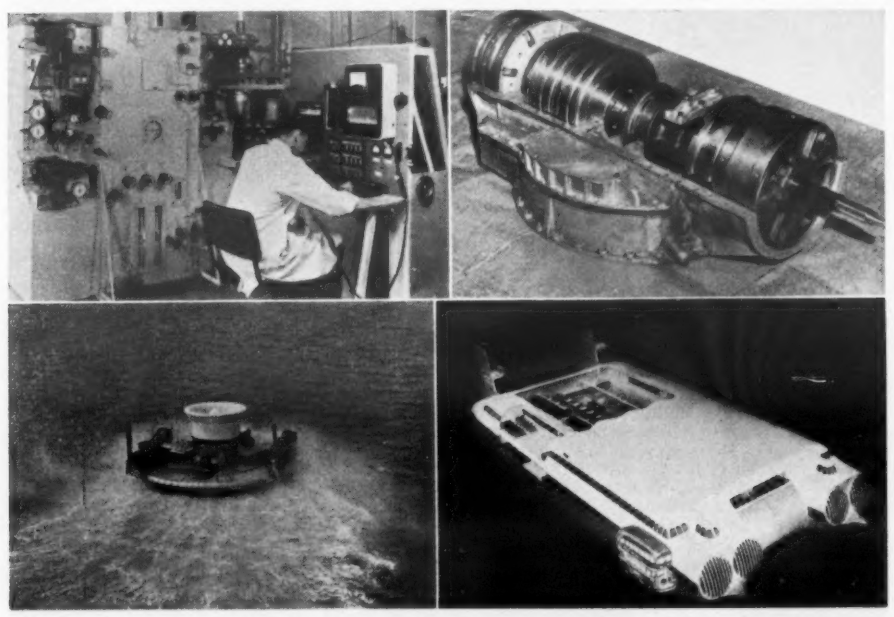
What could be more serious is what might happen in a collision. Any of my engineering friends who have experienced the old belt pulley wheel come apart when revolving at only a few hundred revolutions a minute, and have seen the devastation which can be so caused, can well imagine the result of a cross-road collision. Turn loose a 200-lb. flywheel running at 15,000 r.p.m.—it would go through a city like an atom bomb!

Comparison with America

I am not decrying the experiments at present taking place. Indeed, I am party to them. Today, in all branches of engineering, and not the least in transport, we are dealing with immense forces which we must learn to control and harness. I have touched upon a few of the manufacturer's problems in trying to decide what form his newest bus or coach should take. There are, of course, many other considerations. Some there may be who will say that the day of the urban bus is

(*Continued on page* 11)

Evolution of A.E.C. buses from B type (first built 1910) to NS (1923) and, below, the current Routemaster and Regent Mark V models; the latter (centre) is a vehicle destined for Tehran



The promise of research and development: Bacon fuel cell; the Gyreactor; and, below, the Hovercraft now and in prospect

* Part of presidential address to the Omnibus Society. Sir William Black is also chairman of the National Research Development Corporation.

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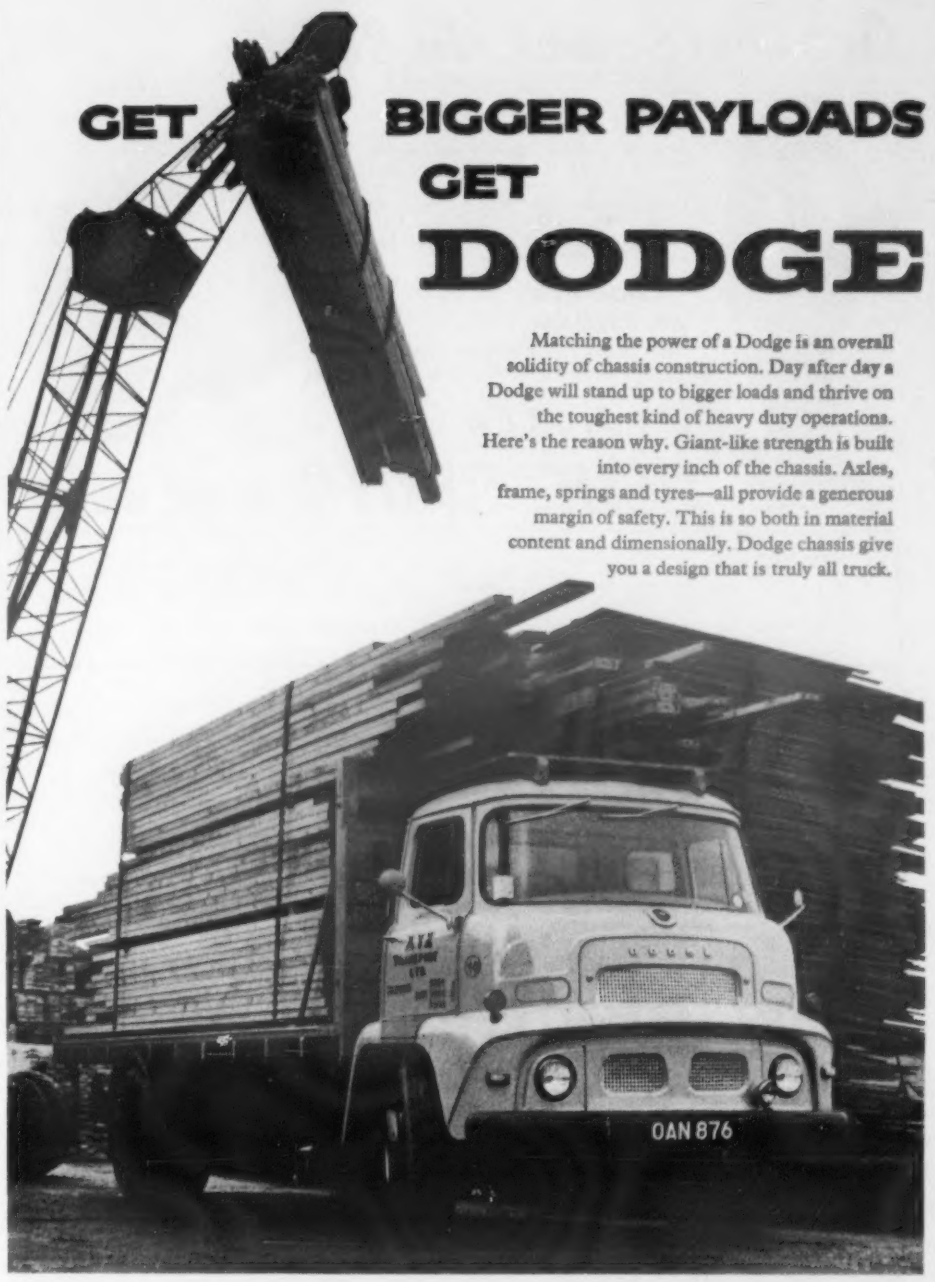

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AP202

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NEW VESSEL FOR ZEELAND LINE

"Koningin Wilhelmina" in Service

FROM Sunday last the Zeeland Steamship Company has placed on its Harwich—Hook of Holland day service the largest vessel in the trade between Britain and the Continent, the *Koningin Wilhelmina* of 6,300 gross register tons. With an overall length of 393 ft. 10 in., length between perpendiculars of 361 ft., a width of 53 ft. 4 in., and a depth to embarkation deck of 31 ft. 2 in., the new ship provides ample two-class accommodation for 1,600 passengers, for whom the 6-hr. passage can be passed most agreeably in lounges, restaurants, sundecks or special accommodation.

This last includes cabins with ship-to-shore telephones and a conference room, for this route is popular with business people who can pursue their affairs without interruption while in transit. A supply of typewriters is also available for the conduct of press-on-regardless business. The sea route thus competes strongly with the air. Later this year similar facilities for commercial pursuits will be available on the other postwar ships of the Zeeland line on the Harwich—Hook route. The *Koningin Wilhelmina* is approved by Lloyds not only for its regular service but for working to ports on the East and South coasts and for European cruising.

Engines

The propulsion machinery comprises two 12-cylinder turbocharged two-stroke direct-reversible M.A.N. diesel engines; the cylinders are 80 cm. stroke by 57 cm. bore and running at 225 r.p.m. ing sofas and convertible beds, some with private toilet and shower. These are particularly suitable for businessmen, having a ship-to-shore telephone in each. For conferences there is a 12-seat conference room which can also serve as a private dining-room and is provided with telephone and typewriter. Somewhat lower in the ship are 29 first-class two-berth cabins with wash-stands.

Navigation equipment includes gyro compasses, Decca navigator, echo-sounding apparatus, two radar units, radio telegraphy, radio telephone and v.h.f. telephone equipment. For fire prevention a fully automatic sprinkler system has been installed. Openings in the fireproof bulkheads are closed by mechanical fireproof doors. For engine-rooms, garages and cargo holds smoke detectors and CO_2 installations have been provided. Life-saving equipment consists of eight lifeboats, constructed of polyester, with a capacity of 60 persons each; supplementary equipment consists of 70 aluminium rafts for 20 persons each.

History

The Zeeland Steamship Company is one of the oldest shipping companies in the Netherlands. It was founded in 1875 after the construction of a railway link between Venlo on the German-Dutch frontier and the port of Flushing on the North Sea, for the purpose of stimulating passenger and goods traffic between the Continent and Britain under the Dutch flag. The service was inaugurated by paddle steamers, erstwhile blockade runners from the American civil war. The adversities the new

The Zeeland Steamship Company's 6,300-ton "Koningin Wilhelmina" for the Harwich—Hook day service in replacement of the 37-year-old "Mecklenburg"

they develop 7,800 h.p. each and give a maximum speed of 23½ knots. Each engine weighs 221½ tons as installed. There are three M.A.N. four-stroke engines for auxiliary services; these have seven 33 by 45 cm. cylinders and generate 870 h.p. at 400 r.p.m. They are coupled to 60-cycle generators.

Denny-Brown stabilisers are fitted; the fins have a combined area of 43 sq. ft., and they are capable of reducing roll to 2 deg. in a sea which would produce 28 deg. of movement. In a choppy sea with wind force 6 they proved most effective. For fast manoeuvring alongside the quays at Harwich and the Hook a Voith-Schneider propeller is provided. It is powered by a 400-h.p. electric motor and it is built in below the waterline in the bow. Electro-hydraulic steering is provided, with servo-motor and double telemotor connection to the wheelhouse. The turning of the rudder from port to starboard takes 20 sec. The ship was designed by Ingenieursbureau Vlieger of Amsterdam in co-operation with the owning company and was built at the Hardinxveld yard of De Merwede Shipbuilding and Machinery Company; the aluminium alloy superstructure and funnel were fabricated separately at De Schelde yards, Flushing. The use of light alloys in the top hamper reduces deadweight and contributes to the stability of the vessel.

Accommodation

For day service the ship can carry 1,600 passengers; there is also provision for loading 45 cars and 200 tons of cargo, loose, in containers or palletised. MacGregor hatches are provided for rapid access to the holds. A special feature is the provision for storage of passengers' hand baggage in large compartments close to the embarkation doors. Of the various public rooms for second-class passengers the large dining-room aft will be run on the cafeteria principle. In the salon below there are cold buffet facilities; an extra counter has been fitted for the sale of liquid refreshments. Forward, these passengers may avail themselves of a rest room; for sleeping on board this will be used only while the ship is in port. There is also a dormitory for passengers who can stand a sea-journey only with difficulty; they will be able to find rest here in two-berth separate compartments.

On the open sundecks there is sufficient space for first- and second-class passengers; here benches and deck chairs are placed in protected positions. For first-class passengers there is a spacious observation lounge under the bridge, giving a splendid view of the forward part of the ship and the sea. On the deck below there is a spacious lounge with cosy corners, a large dining-room and a bar of intimate character. Public rooms run across the entire ship, with a width of 52 ft. 6 in. On the boat deck there are 10 double de-luxe cabins, provided with sleep-enterprise had to contend with were considerable; but for repeated financial aid from Prince Hendrik, brother of King Willem III of the Netherlands, a premature winding-up would have been certain.

At a very early stage the necessity was felt to employ new ships; when these had been put into service in 1878, traffic increased reasonably. Originally there was scheduled only a night service, but in 1887 this was augmented by a day service. With railway aid traffic increased and in the beginning of this century more than 100,000 passengers in one year were conveyed for the first time. In 1910 it proved necessary to order another three new ships and for the first time the choice fell on propeller-driven vessels instead of paddle steamers.

War

Unfortunately the 1914-18 war put an end to prosperity. After the armistice the service was resumed with the three ships remaining afloat, originally as a night service, but later as a day service between Flushing and Folkestone. In 1927 the English terminal was transferred from Folkestone to Harwich and in early summer of 1939 two new motor ships were added to the fleet, m.v. *Koningin Emma* and m.v. *Prinses Beatrix*. War again interrupted the service, this time on November 25, 1939. Both the new motor ships and the steamers *Oranje Nassau* and *Mecklenburg* succeeded in escaping to Britain in May, 1940.

Upon arrival in Britain the two motor ships were used to convey French troops from Britain to France and refugees from France to Britain. Thereafter they saw their first Atlantic service in the conveyance of British troops to Iceland. But their true war task began when they had been converted into attack-landing craft. *Mecklenburg* and *Oranje Nassau* had only a small bunker capacity and had perforce to remain nearer home; the first-named was the largest troopship to take part in the Normandy invasion on D-Day. The two motor ships then went to the Far East on naval business.

After the war business was resumed energetically. Owing to destruction of the Flushing docks and blocking of the harbour it was impossible to use this port as a Continental terminal. Therefore the Hook of Holland was chosen instead and in May, 1947, *Mecklenburg* made her first post-war crossing in the day service to Harwich, starting with three sailings weekly in either direction. After conversion for use as passenger vessels again the two motor ships re-entered the service in 1948, when daily sailings could be resumed. Gradually goods traffic reached its prewar volume; passenger traffic, at first wavering, developed very satisfactorily later and has now reached double the total of prewar days.

A shaft is being sunk near the Eastern Region main line in the London County Council's Finsbury Park on behalf of the London Transport Executive. From it and another shaft in the Seven Sisters Road about one mile of experimental tube railway construction will be carried out. The alignment is that of the Victoria Line, authorised in 1955

MULTI-FUEL ENGINES

*Abstracts of Papers at F.V.R.D.E. Symposium**

TREATMENT OF COMMERCIAL DIESELS AND FUEL INJECTION

RESEARCH ON COMMERCIAL DIESELS

By H. WESLAKE, A.M.I.Mech.E., M.S.A.E., Director, Weslake and Co., Limited

THERE is no fundamental difference between the principle of operation of the orthodox compression-ignition engine burning the heavier hydrocarbon liquid fuels and the multi-fuel engine. Hence a good C.I. engine is potentially a multi-fuel engine. In any C.I. engine the atomised fuel is injected into the heated fast-moving air, ignition being produced by the formation of an envelope of fuel vapour around the droplet, which is ignited by the temperature of the air in contact with it, exceeding the spontaneous ignition temperature of the fuel vapour. Sustained combustion is ensured by sufficiently rapid vaporisation of the fuel, sufficiently rapid feed of oxygen and sufficiently rapid scavenging of the products of combustion.

The overall effect of these various factors is evaluated under standard conditions and expressed as the cetane number of the particular fuel. In the case of the lighter fuels, the cetane value is low, and hence there is difficulty in obtaining satisfactory ignition, particularly under the adverse conditions at high speed and low load, when chamber temperatures are low. In general, the problem is solved in the case of four-stroke engines by raising the air temperature and rate of air movement to compensate for the poor cetane value of the fuel. These results have been achieved by raising the compression ratio (higher air temperature); by diverting the incoming air across a hot spot, such as the exhaust valve (higher air temperature); by increasing the rate of swirl (higher rate of air movement); by raising the volumetric efficiency (higher air density); and by increasing the squish incidental on raising the compression ratio (higher rate of air movement).

B.M.C. 5.1-Litre Engine

A standard B.M.C. 5.1-litre diesel engine was coupled direct to a Heenan and Froude water brake and allowed to run in on diesel fuel for a period of 20 hr. until stable conditions were attained. The full power curve and fuel consumption figures of the engine in as-received condition were recorded, to form the basis for the development work. Previous experience had shown that when petrol was used as fuel there was a tendency for the formation of vapour locks in the fuel system. It was therefore necessary to fit a separate fuel pump to give a higher pressure and greater flow in a continuous circuit via the injector pump back to the fuel tank, thus ensuring a cool supply of fuel, free from vapour locks at all times. A modification to injector pump lubrication was also carried out.

With the engine still in standard form, tests were carried out using MT80 petrol containing 3.6 millilitres of tetra-ethyl lead per Imperial gallon. It was found that the engine started easily on petrol under the pressurised system, but would not exceed 1,200 r.p.m. This was due to the slow burning characteristics of MT80 fuel as compared with those of diesel fuel.

The cylinder head was removed and subjected to air flow and turbulence tests and additional water-flow tests were made with respect to the directional flow of the incoming charge. The tests showed that under actual running conditions the incoming charge could not impinge on the hot exhaust valve; further tests, by a process of elimination, showed that the controlling factors were four in number. The 45-deg. inlet valve seat; the obstruction caused by the material between the inlet and exhaust valve seats; the position of the masked inlet valve; and the contour under the inlet valve head.

These faults were overcome by conversion to a 30-deg. inlet valve seat; removal of the material between the inlet and exhaust valve seats; rotating the masked inlet valve by 150 deg. in a clockwise direction from the standard position; and modifying the contour under the inlet valve head. Further water-flow tests showed considerable impingement of the incoming charge on to the exhaust valve, thus ensuring that the approach of the incoming charge took the shortest path to the hot zone to produce a higher air temperature.

Modification to Cylinder Head

The conversion of the inlet valve seat from 45 to 30 deg. produced a sharp approach from the port throat diameter to the valve seat. This approach proved to be detrimental to the air flow of the inlet port but was overcome by fitting an insert of a smaller throat diameter, with a radius leading to the valve seat. The incorporation of a smaller throat necessitated the repositioning of the mask with reference to the axis of the valve. Further air-flow tests showed a considerable improvement of the air flow and turbulence over those obtained with the head in its standard form. It was also found that reducing the width of the mask produced an improvement of the air flow and turbulence.

Previous experimental work had shown the importance of reducing to the minimum the clearance between the piston crown and the base of the cylinder head. This clearance was reduced by replacing the standard gasket of .048 in. in thickness by one .029 in. thick. To speed up the burning of the fuel-air charge, it was found necessary to fit pistons with a toroidal type combustion chamber. This produced a higher degree of turbulence, owing to its restricted throat diameter, as against that of the standard piston. It was also found from previous work that trouble was experienced with top land seizure when using MT80 fuel and this necessitated a reduction in top land diameter by .004 in. These modifications to piston and gasket thickness produced a rise in compression ratio from 16.5 to 18.5 : 1.

Modification to Cylinder Liner

The fitting of the thinner gasket resulted in cracking of the cylinder liners, due to the local thickness around the cylinder bore of the gasket sealing ring, which produced unnecessary stresses in the cylinder liner. It was found necessary therefore to machine a recess 105 mm. in diameter and .008 in. deep in the cylinder liners to accommodate the overlap of the gasket.

It had been found previously that adjustments had to be made to the fuel pump to attain different conditions when using the two types of fuel. This required development work to achieve a condition where minimum adjustment of the fuel pump was necessary to give satisfactory performance when using either fuel. Tests were carried out with the engine in its modified form with modifications to the fuel pump. It was found that satisfactory performance was obtained with diesel fuel with the standard pump and rack settings, but MT80 required adjustment to the rack settings to give approximately 90 b.h.p. at 2,400 r.p.m. using the standard pump setting of 28 deg. b.t.d.c.

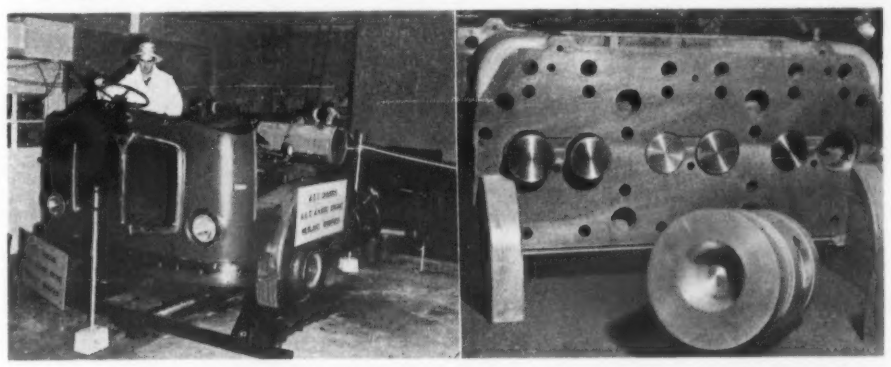
A power curve taken with the engine in its modified form produced a slight increase in power over that of the engine in as-received condition, with a slight reduction in fuel consumption. When using MT80 fuel, it was found that when the pump rack setting is adjusted to give 90 b.h.p. at 2,400 r.p.m. the power output result is comparable with that obtained with diesel fuel, giving flexibility throughout its working range.

A.E.C. AV690 Engine

The test procedure with an A.E.C. AV690 11.3-litre engine was exactly the same as that followed with the B.M.C. engine; modifications were found necessary to enable the engine to run on both diesel and MT80 fuels and to produce a power output on both fuels comparable with the maker's rating on diesel fuel. Modifications comprised an increase in compression ratio, using the standard type combustion chamber, giving a compression ratio of 18 : 1; a pressurised petrol fuel system; positive lubrication to fuel pump; and a fuel stop adjustment when using MT80 fuel. Modification of the cylinder head included conversion of the 45-deg. inlet valve seat to 30 deg.; removal of material between inlet and exhaust valve seats; and rotating the masked inlet valve through 180 deg., which improved the directional flow of the incoming charge to the hot zone.

The effect of the modifications on air flow and turbulence was that the air flow at the lower lift range had to be sacrificed to produce a higher degree of turbulence, whereas at the high lift range turbulence was sacrificed for a gain in air flow. The performance after modification on diesel and MT80 fuels is compared in the accompanying illustration with standard performance.

This engine will also run under full-load conditions on premium-grade petrol of 97 octane rating, although this necessitates resetting the injection point to 29 deg. from the original 26 deg. b.t.d.c.



A.E.C. chassis fitted with AV690 diesel modified by Weslake for multi-fuel operation running on roller dynamometer in high ambient temperature; right, picture showing details of the modified cylinder head

The necessary flow of lubricant to the cambox could be obtained by the provision of leakage grooves on the lower surface of the pumping plungers but this method would have the disadvantage of increasing the flow of oil to the plungers and, with it, the risk of dirt being introduced. A very satisfactory solution has been found, employing a lubricating oil feed to one of the pump tappet bores. The clearance between the tappet and its bore effectively restricts the flow of oil without risk of blockage such as might occur if a simple orifice restricter were used.

Maximum Fuel Setting

To maintain normal rated power output from the engine the maximum fuel setting of the injection pump must be increased as the density and viscosity of the fuel reduces. This is necessary for two reasons—the delivery from the pump is in general reduced, due partly to increased leakage and partly to increased fuel compressibility, the extent depending on the particular system specification; and the heat content of a given volume of fuel metered by the pump is lower, approximately in proportion to the specific gravity of the fuel.

While, for any given application, there would be no great difficulty in designing an adjustable fuel stop for the pump which could be set to give the exact delivery for a range of known fuel specifications, it is doubtful whether it would be justified or, if provided, whether its correct use could be ensured in service. A maximum fuel stop has been designed to provide two positions only, one for normal gas oil operation and the other for petrol. For intermediate fuels or fuel mixtures the setting chosen will depend on the relative importance of, on the one hand, slight sacrifice of engine power and on the other avoidance of exhaust smoke.

No Effect on Excess Fuel

Manipulation of the stop is simple, requiring the use of a screwdriver only, but it is capable of being sealed in either position to prevent unauthorised tampering. Applied to a pneumatic or mechanical governor, there is no interference with the normal provision of excess fuel for starting. There is an alternative design of two-position maximum and excess fuel stop designed for mounting directly on the injection pump. This is arranged for operation from the driver's cab, either mechanically or by electric solenoid, and is intended for experimental or demonstration purposes only. A variant of this design arranged for under-bonnet operation is however available.

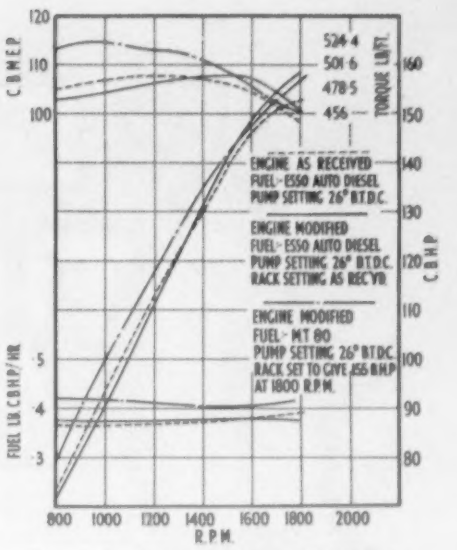
On theoretical grounds it could be expected that fuels of differing density would require changes in injection rate but in practice any loss in power output of efficiency resulting from a compromise choice of cam rate and plunger size is, for the range of fuels considered, usually negligible. In this connection it must be borne in mind that petrol fuels, being of lower cetane number than gas oil, will have longer ignition delay, so that the actual period from beginning of combustion to end of injection is not markedly different. Similarly, an acceptable compromise in injection timing can usually be found and readjustment of timing to suit each fuel does not warrant the complication involved. Naturally, engines differ in their sensitivity to departures from optimum injection rate and timing and the extent of the loss in performance incurred as a result of using fixed compromise settings will vary with different combustion systems.

Fuel Supply

In any spill-controlled injection pump, some release of fuel vapour occurs in the suction chamber at the instant of spill. With gas oil, this vapour rapidly condenses but with increase of fuel volatility accumulations of vapour may occur, giving rise to reduced or erratic pump delivery and, ultimately, to complete vapour lock. This problem is dealt with in two ways—by continuous circulation of fuel through the pump; and by pressurisation of the pump suction chamber.

By maintaining the suction chamber of the pump at a pressure which, dependent on the operating temperature and the vapour pressure of the fuel may be from 10 p.s.i. up to 25 or 30 p.s.i., vapour formation can be considerably reduced. Clearly, it is also desirable that the temperature of the fuel in the pump should be as low as possible and this is assisted by ensuring an adequate air flow over the pump and preventing radiation from exhaust manifolds, etc., to the pump and fuel supply lines. To avoid accumulation of fuel vapour, which despite the pressurisation of the pump may still occur, fuel is continuously circulated through the suction chamber and returned direct to the fuel tank. A flow rate up to 1½ to 2 times the maximum engine demand has been found desirable. In addition to removing vapour, this circulation has the advantage of providing an additional measure of cooling for the pump.

When an engine is shut down for a short time following a period of full-power running, vapour may accumulate in the pump due to the soaking back of engine heat and subsequent starting may prove impossible until the engine has cooled. By the provision of an electrically driven supply pump, which can be switched on before starting and so purge the system of vapour, this difficulty is overcome. This pump may be of the low-pressure type, pressurising during normal running being provided by a normal engine- or pump-mounted transfer pump, or it may replace the latter and provide both flow and pressure continuously under all running conditions.



Curves showing effects of modification by Weslake and Company of A.E.C. 11.3-litre diesel engine

MULTI-FUEL INJECTION SYSTEMS

By W. E. W. NICOLLS, B.Sc., Chief Development Engineer, C.A.V., Limited

THE problem of fuel injection on multi-fuel engines is a twofold one. The system itself must be capable of functioning correctly, with unimpaired reliability and life, on fuels having widely varying physical properties. In addition, because adjustments to the engine itself to suit individual fuels are clearly impracticable, the injection system must provide for such adjustments as may be necessary to maintain engine performance irrespective of the fuel in use.

Such adjustments, for obvious practical reasons, must be few in number and, so far as is possible, foolproof in character. The more insensitive the engine is, both to the properties of the fuel and to the characteristics of injection, the simpler this part of the problem becomes. The purpose of this paper is to deal briefly with the influence which these varying fuel properties has on the design and functioning of the principal components of the fuel system and to indicate the more important changes which experience with the use of these fuels has shown to be necessary.

Conventional Multi-Plunger Pump

The precision components of the injection pump, elements and delivery valves, raise no special lubrication problems. No evidence has been found of any increased wear of these parts when operating on low-viscosity petroleum fuels, provided these fuels are free of abrasive material. The increased rate of leakage past the plunger clearance will, unless prevented, result in excessive dilution of the lubricant in the camshaft housing, with consequent failure of cams, tappets or camshaft bearings. This leakage can be minimised by the provision on the plunger, or in the barrel, of a relief groove connected by suitable drillings to a region of low pressure, that is, the low-pressure supply system or fuel tank.

There is some danger with such a system that the fuel film on the lower exposed surface of the pumping plunger may oxidise or dry off during prolonged periods of standing, leading to sticking of the plunger when next operated. Moreover, even the much-reduced leakage rate may eventually lead to dilution of the cambox lubricant if regular draining and replenishment is not observed.

By introducing lubricating oil under pressure to a second groove in the pumping element, positioned between the fuel relief groove and the free end of the plunger, all back leakage of fuel is prevented. The lubricating oil film on the exposed surface of the plungers gives complete protection during periods of standing. The cam and tappet mechanism can now operate in any suitable lubricant without danger of dilution. However, since there is no back leakage fuel to maintain the lubricant level within the cambox, it is preferable to avoid dependence on maintenance procedures by circulating lubricating oil from the engine continuously through the cambox with an overflow to the engine sump at the appropriate lubricant level.

Distributor-Type Pump

The C.A.V. Type DPA distributor pump is being increasingly adopted on diesel engines and well over 200,000 of these pumps are already in service. The modifications necessary to make this pump suitable for operation on multi-fuel engines are indicated below. All parts of this pump work fully submerged in fuel. Experience over several thousand hours of operation has shown that no special provision for lubrication is necessary, even when operating on petrol.

The standard DPA pump already provides for continuous circulation of fuel through the supply passages and into the cam chamber, from which the surplus flow is normally returned to the feed system. When operating with volatile fuels this flow is returned direct to the fuel tank. Dependent on the particular pump installation and operating temperature, additional continuous venting points may be provided if necessary. Since the distributor pump embodies its own high-pressure transfer pump, a moderate feed pressure only is required, sufficient to suppress vapour formation in the supply line. For this purpose an electrically driven tank pump is admirably suited. The distributor pump has an added advantage in that there is no spill action to promote vapour formation within the feed passages of the pump.

Maximum Fuel Setting

In the standard DPA pump, adjustment of maximum fuel cannot be effected with the pump in operation and, not being readily accessible, is normally proof against unauthorised tampering. For multi-fuel operation, a special external adjustment is provided. This is combined with an automatic excess-fuel device which permits a larger amount of excess fuel than that given by the standard pump to offset the fall in low-speed pump delivery occurring with fuels of low viscosity.

This feature comprises a small auxiliary piston which subtracts a constant amount from the displacement of the main pumping pistons at each injection. By varying the stroke of the auxiliary piston, the net quantity discharged by the pump can be changed to suit the fuel in use. By means of an automatic valve operating as a function of pump speed, this piston can be rendered inoperative at starting speeds, thus making the full pump displacement available for starting. Adjustment of the stroke of the auxiliary piston is by simple screw stop, but a two-position stop similar to that used on multi-plunger pumps can readily be applied.

Injection Rate and Timing

As with the multi-cylinder camshaft pump, a satisfactory compromise in injection rate and timing can be employed to cover the required range of fuels. The distributor pump provides for automatic variation of injection timing with speed. Since this is hydraulically operated by fuel pressure it is affected by changes in fuel viscosity. By the use of a simple form of viscosity compensator the operation of the automatic advance mechanism can be made substantially independent of changes in the fuel.

No special difficulties are normally encountered with the injectors when operating on the lighter classes of fuels. It is essential however that adequate attention be paid to injector cooling in an engine intended for multi-fuel operation. Compression ratios of such engines are commonly higher than for gas oil operation and the higher mean combustion temperatures can result in higher heat flow into the nozzle. With fuels of high volatility, local combustion temperatures in the vicinity of the nozzle may be higher than for gas oil under the same engine conditions, again increasing the heat flow.

From the point of view of injector cooling, the increased rate of nozzle backleakage occurring with the lighter fuels would appear to be of some advantage. This backleakage, while having negligible effect on the functioning of the injection system, can amount to 3 or 4 per cent of the engine consumption and will adversely affect fuel economy unless returned to the fuel system. To avoid vapour accumulation it is preferable to return this backleakage direct to the fuel tank rather than to the pump supply system.

Fuel Filtration

Reference was made earlier to the necessity for ensuring that the fuel is free of abrasive material and other dirt capable of damaging the precision parts of the pump. While this is important whatever the fuel used, it is particularly necessary when operating on fuels of low viscosity. For this purpose, filters of the type employing paper as the filtering medium are especially suitable. The design adopted combines a high standard of filtering efficiency with a very large filtering surface, some 560 sq. in., in very compact dimensions.

This brief review indicates the general nature of the modifications which must be incorporated in currently-used fuel-injection systems to render them suitable for operation on multi-fuel engines. It also shows that, subject to the basic suitability of the engine for multi-fuel operation, the engine requirements for operation on the various fuels can be met by a single adjustment only, to restore engine power. With the modifications indicated, multi-fuel operation need have no adverse effect on reliability and life of the fuel-injection system.

* Previous parts appeared December 5 and 19 and January 30.

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NEWS FROM ALL QUARTERS

Great North Road Improvement

Work on the modernisation of a further four miles of the Great North Road in the West Riding of Yorkshire is to start immediately. This is the addition of a second carriageway to the road between Redhouse and Wentbridge.

Hope Valley Line Stations to Remain Open

As a result of further investigation the London Midland Region has decided not to submit proposals to the area Transport Users Consultative Committee for the withdrawal of passenger-train service on the Chinley—Dore branch (Hope Valley line).

District Line Modernisation

A further stage in the resignalling of the London Transport District Line between Bow Road and Upminster, under the £2,500,000 modernisation and improvement plan for the line, has been reached; new signalling has been brought into use over a further two-mile stretch of track. Standard two-aspect signals have now been installed from a point between Plaistow and Upton Park to a point between East Ham and Barking.

New Bridge at Haddiscoe

The old hand-operated bascule bridge at Haddiscoe, near Great Yarmouth, familiar to drivers on the Yarmouth—Bungay road, A143, is to be replaced by a three-span steel and concrete bridge. Sited close to the western side of the old one, the new bridge will give adequate headroom for vessels using the New Cut between the Yare and Waveney. It will also carry the road over a branch railway line, to eliminate the present level crossing which is used by more than 4,000 vehicles daily.

Transport and Product Costs

An appeal to industrialists to use the boom they are enjoying at present as a cushion against inevitable increases in transport costs was made by Mr. W. Hope Collins, president of the Glasgow Chamber of Commerce, in Glasgow on February 4. He said that it was essential for the continuing stability of the country that these increases should not be passed on to the public. They had had two or three years now in which there had been a reasonably steady cost of living, but he feared there was a possible danger of increased transport charges starting the whole roundabout again.

Volk's Electric Railway

Brighton Town Council had a lively discussion at its meeting on February 4 when, despite a plea from the chairman of the Transport Committee (Alderman A. V. Nicholls) that it would be "a tragic mistake" to put the seafront Volk's electric railway in the hands of people who "don't know the front wheels from the back," it decided by a large majority that the railway should be run in future by a new combined Entertainments and Publicity Committee and not, as at present, by the Transport Committee. Alderman Nicholls said the Transport Committee had run the railway at a profit for 21 years. It had provided £7,800 for the relief of the rates, and last summer it made a profit of £1,000.

Train Running Performance

Mr. J. R. Ropner, chairman of the North Eastern area Transport Users' Consultative Committee, at its meeting at Darlington on February 5, said that he had obtained from British Railways figures about the running times of four trains on the Darlington and Kings Cross, London, route during November and December. These showed that of 200 journeys, 18.5 per cent were on time, 22 per cent were more than 20 min. late, and the rest were one to 20 min. behind schedule.

Eastern Region Traffics Up

In the first three weeks of this year, the Eastern Region carried 83,000 more tons of general merchandise traffic representing an increase of nearly a quarter compared with 1959. Minerals were up by more than 80,000 tons (12.27 per cent) and coal and other fuel by more than 200,000 tons (13.08 per cent). There was £90,000 worth of extra passenger business (8.98 per cent) and parcels and mails brought in an extra £14,000 (3.76 per cent). Total increase in business, passenger and freight, for the first three weeks was running at more than £100,000 a week.

Great West Viaduct Road Plan

A further stage has been reached in the planning of the length of the Chiswick—Langley motorway to be constructed on a viaduct over and along the Great West Road. The Minister of Transport has published a draft order providing for alterations to existing public roads. The proposed route for the whole of this motorway was published in a draft scheme in July, 1958, but the scheme has not yet been made. It is proposed that the viaduct should start at the western end of the Chiswick flyover, continuing for about a mile over the Great West Road to Boston Manor Road. There, under the present proposals, it will branch north-westwards over the Maclean factory and the playing fields beyond. Traffic would enter or leave the motorway about a quarter of a mile to the west of the flyover by means of an interchange point with ramped approaches between Lionel Road and Clayponds Lane, Gunnersbury.

Daytime Car Train

British Railways is to introduce for the first time a luxury day-time restaurant-car service for motorists and their cars between Edinburgh and London. The new train is to be named *The Anglo-Scottish Car-Carrier*. It will run on weekdays from May 30 to October 1. Leaving Edinburgh Waverley at 11.50 a.m. Mondays to Fridays and 11.15 a.m. on Saturdays, it will arrive at Holloway car loading bay, London, at 8.30 p.m. Mondays to Fridays and at 7.45 p.m. on Saturdays. The northbound train will leave Holloway at 7.55 a.m. Mondays to Fridays and 7.20 a.m. on Saturdays, arriving at Edinburgh Waverley at 3.34 p.m. (Saturdays 3.37 p.m.). Cars will be loaded at No. 11 platform at Waverley Station. The purpose of the early departure from London, it is stated, is to enable motorists to avoid peak-hour traffic en route to Holloway. Cars will also be accepted to or from Newcastle en route, and will be driven to Tyne Commission Quay if desired to meet Bergen Line steamers.

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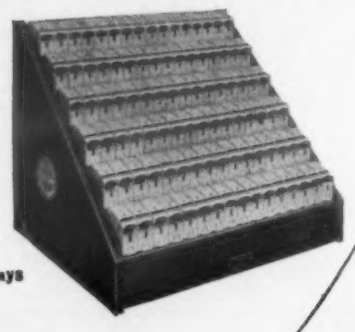

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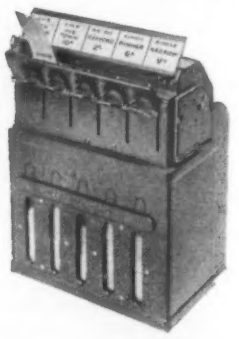

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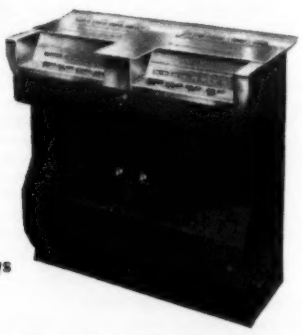

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COMMERCIAL AVIATION

B.O.A.C. Through Cairo

SWISSAIR IN 1959

FOLLOWING negotiations with the Egyptian authorities, it has been agreed that after a lapse of 3½ years B.O.A.C. should resume services through Egypt on April 10 next. It is planned initially to operate a total of four return services a week with de Havilland Comet 4s through Cairo from London to points in Pakistan, India and the Far East.

Dublin Airport Traffic

In the quarter ended December 31, 1959, aircraft movements at Dublin Airport totalled 6,457, of which 5,058 came within the air transport category. Passengers handled numbered 117,385 and freight amounted to 2,695.42 tons.

New Services Approved

The Minister of Aviation, after considering the recommendations of the Air Transport Advisory Council, has approved the operation of the following air services:

An inclusive tour service by Derby Aviation on the route Manchester—Basle—Munich from January 7, 1960, to March 27, 1960.

An inclusive tour between London (Gatwick) and Tenerife by Transair, Limited, from January 8, 1960, until April 3, 1960.

A normal scheduled service to be operated by B.K.S. Air Transport, Limited, between Southend and Lille from February 1, 1960, to May 31, 1963.

Brazilian Conditions for B.O.A.C.

Before Mr. Duncan Sandys, Minister of Aviation, left Brazil for London on February 6 it was announced that he and Brigadier Correa de Melo, Brazilian Air Minister, were favourably considering B.O.A.C. and Panair do Brasil operating a pooled service between Britain and South America. The Brazilian restrictions on B.O.A.C. picking up passengers in Lisbon for Brazil or vice versa are being provisionally lifted. The negotiations follow similar ones with Argentina started a fortnight ago over a possible pooling arrangement between B.O.A.C. and Aerolineas Argentinas.

South Pacific Air Lines

Tahiti will become more accessible to United States on April 2, when South Pacific Air Lines begins scheduled service between Honolulu and that island. A Lockheed Super Constellation will leave Honolulu on Friday evenings, returning on Saturday mornings. The flight time will be 8 hr. 45 min. Until the new runway at Papeete is completed in the autumn, passengers will land at Bora Bora, some 160 miles to the west. S.P.A.L. hopes to obtain Civil Aeronautics Board approval for a direct route from Los Angeles and San Francisco; the operator has already taken an option on a Convair 600 jet for delivery late in 1962.

Latest DC8 Approved

Long-range, intercontinental models of the Douglas DC8 jet air liner were approved for airline service last week by the U.S. Federal Aviation Agency. The intercontinental is the third model of the Douglas transport delivered since certification of the initial domestic version on August 30, 1959. Powered by Pratt and Whitney JT-4 (J-75) turbojet engines, the latest version of the DC8 range will be able to fly at speeds up to 600 m.p.h. and will cruise at 585 m.p.h. At the maximum gross take-off weight of 310,000 lb., including 150,000 lb. (23,000 gallons) of fuel, the DC8 will have an operating range of approximately 5,000 miles. A total of 59 of the 152 DC8s to be built by Douglas are intercontinental versions powered by the JT-4 engine. Alternative power plants for this model are the Rolls-Royce Conway, which will be installed on the next model delivered, and JT3D turbofan engines. Deliveries of intercontinental DC8s will be only three to five weeks later than the target dates set more than four years ago.

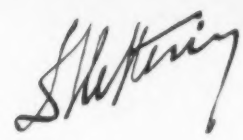
More Contracts for Flying Tiger

A substantial increase in military and commercial contract flights has been booked for the first two months of 1960, Mr. George Vaughan, manager, contract sales, Flying Tiger Line, announced recently. Contracts for approximately $1,750,000 of traffic would be flown in these two months and there was a prospect of substantially more business in March and April. The airline booked some $800,000 of military contract business for January and an additional $565,000 for February, while commercial traffic for the two months probably would exceed $350,000. January military traffic awarded to the airline included 29 trips for the Military Air Transport Service across the Pacific from Travis air force base to Honolulu, Guam, Manila, Okinawa and Tokyo. For February, the airline has scheduled 13 trips to Manila, Guam and Tokyo. Additionally, the airline was flying two flights a week from New York to Europe under a contract for Lufthansa, the German airline, and this contract had been extended to operate to June 30, 1960.

Swissair in 1959

Swissair results for 1959 showed a continued expansion of traffic, although there was no increase in the company's fleet. Capacity produced rose by 7 per cent over 1958 and totalled 196,784,000 ton-km. Capacity sold totalled 120,002,000 ton-km or 8 per cent more than in 1958; the average load factor on the scheduled services was 61.1 per cent (1958: 60.1 per cent). Aircraft utilisation also improved; the DC7Cs averaged over 11 flying hours per day and the DC-6Bs over 9 hrs. During 1959 the network was extended from 110,000 to about 127,000 km. Ankara, Kuwait and Tehran were added, making the number of destinations served by Swissair 55 in 37 countries. Financially, 1959 was the company's best year ever. Total revenue exceeded Sfr. 270 million (about £22.5 million). Despite the costs incurred in preparing for the introduction of jets, expenditure was kept within reasonable limits. The operating profit allowed Sfr. 10 million (about £833,000) to be set aside for additional depreciation, apart from Sfr. 20 million (about £1,666,000) allocated to normal depreciation. In Europe, where Swissair offered 35.4 per cent of its total capacity, traffic showed general improvement over 1958; the services to and from the United Kingdom produced particularly satisfactory results. Despite increased competition, traffic to the Middle East fulfilled expectations. Although other carriers were already operating jets on the North Atlantic during 1959, Swissair capacity on this route was well utilised. The South America services, although influenced unfavourably by the political and economic situation in the three countries served, nevertheless produced relatively satisfactory results. Increasing competition was met on the Far East route, but here again Swissair made further progress.

PRESIDENCY OF U.I.C.



Prof. Dr. H. M. OEFTERING

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First representative of a European railway undertaking other than the French to occupy the presidency of the International Union of Railways, Professor Dr. Heinz Maria Oeftering, chairman of the German Federal Railway, is now in his second year of office. The son of a professor, he was born in Munich on August 31, 1903, and studied law and political science in Munich and Heidelberg, where he qualified during 1929. After a brief period in the Bavarian Civil Service he joined the State Finance Administration in 1930. In 1932 he was appointed an assistant to the State Finance Offices in Munich and, in 1935, after further promotion was transferred to the Ministry of Finance. From 1940 until 1943 when he joined the armed forces his work was specially concerned with general finance and credit matters. After the war Dr. Oeftering resumed his work in the Financial Administration commencing in 1945 as President of the Central Audit Board of Hesse-Palatinate, and in 1947 he moved to a similar post in Rhineland-Palatinate. Two years later he joined the Federal Ministry of Finance as a Ministerial Director and Head of the Department for general policy and questions of public funds. Within that sphere were the federal budget, the federal assets and debts, loans, financial relations with the Länder, defence expenditure and reconstruction. In connection with this work Dr. Oeftering was chairman of the board of the Volkswagen works at Wolfsburg and the Howaldt works at Kiel. He has also held the post of deputy-chairman of the board of the Howaldt works and of the V.I.A.G. (Vereinigte Industrie Unternehmen A.G.) and has been on the board of several other enterprises. Dr. Oeftering is the author of several important books on the subject of taxation. Furthermore he is co-publisher of "Steuer und Wirtschast" and the "Deutschen Steuerzeitung." He was named president of the Federal audit office on February 22, 1957, and chairman of the German Federal Railway in May of the same year.

IN PARLIAMENT

Footing Rail Wage Bill

MORE 40-M.P.H. ROADS

DESPITE strenuous questioning by the Opposition, MR. ERNEST MARPLES declined to give any hint as to whether the Government might contribute financial assistance to the B.T.C. to enable it to meet any award of the Guillebaud Committee now considering the railway wages structure. It is to report shortly and Mr. Marples commented on this by saying that it took almost six months to settle the terms of reference. [The unions, it will be recalled, took some time to agree upon these.—EDITOR.] MR. G. NABARRO said he ought nevertheless to concede that, as there is a very large trading loss forward on the British Transport Commission's accounts, any substantial increase in railwaymen's wages will, directly or indirectly, increase that loss forward. Did not that fact transpose matters and cause railwaymen's wages to become much more largely a House of Commons matter than a matter to be left solely for negotiation between the Commission and the trade unions? After further questioning, the Minister pleaded that he should not be pressed. He was aware of both the short-term and the long-term financial problem of the railways.

More 40-m.p.h. Roads

The Minister of Transport said that, as a result of the success of the London traffic area experiments, he intended to authorise the introduction of 40-m.p.h. roads anywhere in the country. The report of the departmental committee on road safety on the London experiment would be made available to both houses in the near future.

Parking Space at M.o.T. Offices

LORD JOHN HOPE said that the total number of staff who will occupy the new Ministry of Transport office building in Southwark will be about 3,500. The new building will have parking facilities within its precincts for about 280 cars. This is in accordance with the planning standards for the area.

Co-ordination Revived

MR. H. J. BOYDEN asked the Minister of Transport if he would, as a matter of urgency, consult with industrial and other organisations concerned, with a view to making plans for greater co-ordination of road and rail transport so that traffic could be diverted from the most dangerous roads. MR. ERNEST MARPLES commented that the best way to help with this problem was to improve both road and rail facilities, and that was being done. After other Socialist members had expressed their concern about the growth of road traffic (whether they were solely concerned with the accident problem appeared in some doubt), the Minister said this was a phenomenon happening all over the world. In the United States, the Denver—Chicago Trucking Company could take goods by road from Chicago to Los Angeles, which was an enormous distance, more cheaply than they could go by rail. It was taking goods away from the railways. The real point was that this was a convenient way of taking goods from door to door, which was the attraction, rather than a question of the cost. Government policy, he repeated in a subsequent answer, was to ensure that both road and rail can each make its contribution as effectively as possible to the economic life of the country.

★

ROADRAILER EXPERIMENTS

(*Continued from page 3*)

the new type of vehicle"; *Morning Post*, "The search for the 'missing link' in transport . . . has at last met with success"; *Yorkshire Telegraph*, "An invention which may well effect a revolution in transport development"; and one of our more exuberant dailies headed its report: "THE 9.15 IS AT THE DOOR, SIR."

Regular Service

The L.M.S. Ro-Railer was then put into regular service between Blisworth Station and Stratford-upon-Avon by rail, thence by road to the L.M.S. Welcombe Hotel, garaging for the night there and returning to Blisworth as a regular train the next morning. It remained on this service for some months without trouble except for a short period of front end wheel wobble. Mechanically the through service was performed successfully but it attracted little revenue and was eventually discontinued. The then r.m.e. of the L.M.S.R. has two vivid recollections of this service: first the dense crowds blocking the streets of Stratford on the first day of the service, which caused a late arrival at Welcombe; crowds which he afterwards learned were attracted by the opening of the newly rebuilt Shakespeare Memorial Theatre and not by the Ro-Railer's public appearance in the streets.

Secondly, misgivings, not easily banished, when he watched the little Ro-Railer crossing from one side of Blisworth Station to get to the turntable on the other, blocking all the up and down main lines as it did so. "Supposing it——?" or, "what would happen if——?" But it didn't! The trial period thus came to an end and, after a few more brief demonstrations, the vehicle was put away at the Commer-Karrier works at Luton and presumably has now been cut up, though a suggestion was made that one axle and pair of dual-purpose wheels should be preserved.

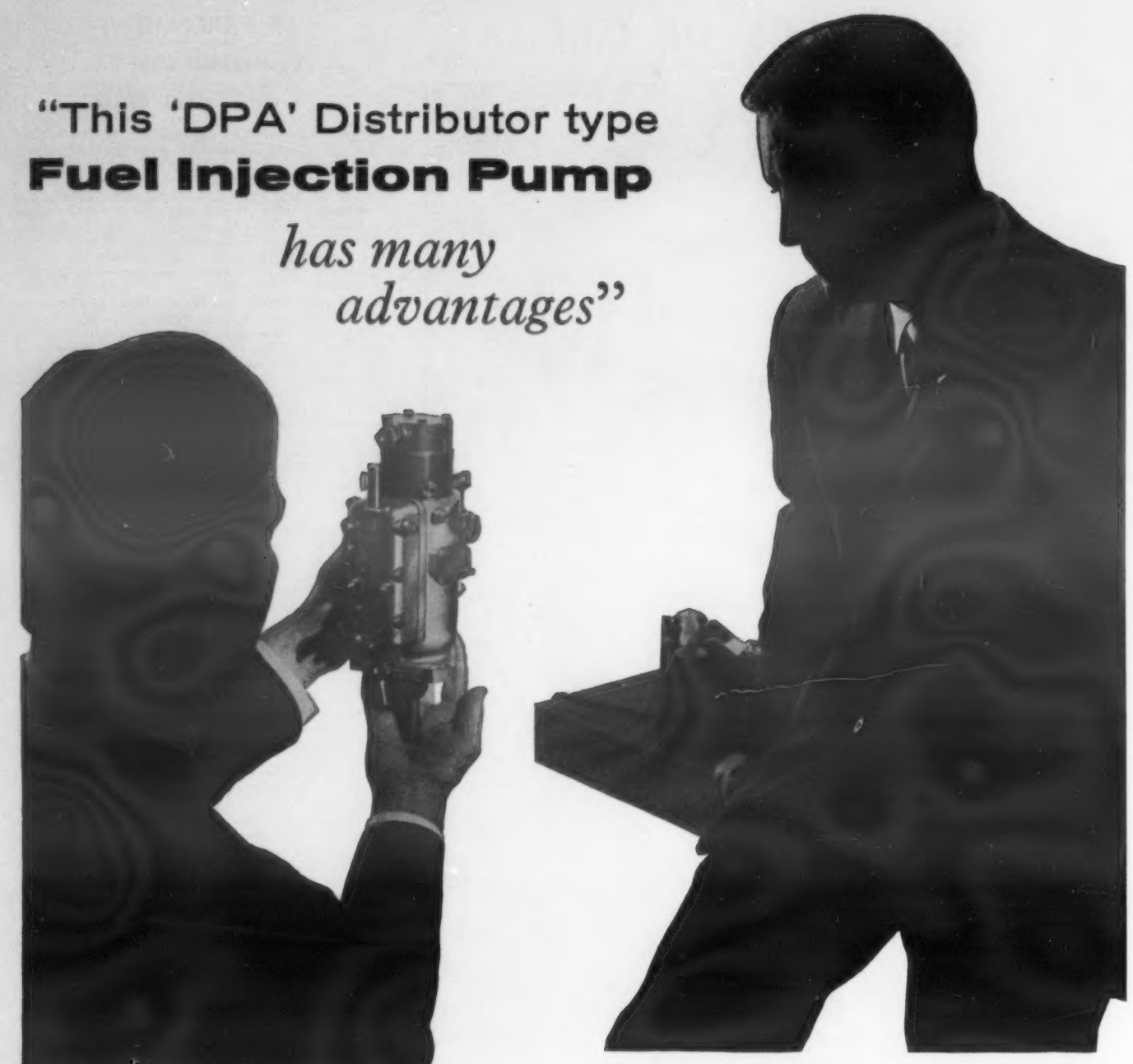
Claims

It can fairly be claimed that the L.M.S. Ro-Railer was successful mechanically, though no doubt better machines would have evolved from it. It was too heavy for its power and seating capacity, but the wheel-changing system met all requirements. The L.N.E.R. acquired one such vehicle for permanent way work, as did the Liverpool Tramways; two were sold to Holland for use on a narrow-gauge railway there. Working drawings were also prepared for a Ro-Railer goods truck or trailer, but were not used.

The broad impression which remains was that the operating departments were understandably reluctant to accept the hybrid newcomers with their many comparatively unproved components. Nevertheless the whole experience can be looked back on as exciting and enjoyable in spite of some unrealised hopes, especially by those of the road motor engineer's department, L.M.S.R., of a generation ago who shared in the work.

To all such who are still alive it must be gratifying to learn that the Roadrailer (sic) is emerging again, this time in the form of a freight-carrying semi-trailer, but apparently with the same principle of retractable road wheels; and that it is considered capable of cutting out transport delays in the handling of freight. Good luck to it!—J.S.

"This 'DPA' Distributor type
Fuel Injection Pump
has many advantages"



It is so small and compact that it can be fitted snugly against the engine and makes a very neat installation. It lends itself to simple driving arrangements and can be mounted either horizontally or vertically. The position does not affect lubrication, because the pump runs in filtered fuel oil under a slight pressure and no special lubrication is needed. It is suitable for high speed work, because its rotating parts are light and there are no highly loaded springs. There is much more besides . . .

Over a quarter of a million already in use

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The World's Largest Manufacturers of
FUEL INJECTION EQUIPMENT
C.A.V. LIMITED, ACTON, LONDON, W.3

AP 975

FAST-TRAVEL MOBILE CRANE

Higher Rated Jones Model

THE 10-ton capacity Jones KL 10-10 Fast-Travel mobile crane produced by K and L Steelfounders and Engineers, Limited, Letchworth, is to be replaced by a modified machine having a 12½-ton capacity. It will be known as the Jones KL 10-10 Mk. III. The original KL 10-10 was first introduced in 1957 and attracted considerable attention at the time by virtue of its unusual design. At first glance resembling a lorry-mounted crane, it was in fact the effective and efficient compromise between the lorry-mounted type and the conventional mobile crane, and combined many of the features of both. Among the most important of these were the use of a single prime mover to power all crane motions as well as to travel the crane at road speeds up to 30 m.p.h., and the provision of a single cabin housing both travel and crane controls, these being designed to be operated by one driver.

Improved Cab

Operating experience has now suggested certain modifications and improvements, the most immediately obvious of these being the entirely redesigned driver's cab. The original conventional cab which occupied the full width (8 ft.) of the chassis has

The Jones KL 10-10 Mk. III, a 12½-ton version of the fast-travel mobile crane

now been replaced by a cab off-set on the offside. Two driving positions are provided, one facing forwards, for road travel, and one facing the rear, the latter being equipped with simplified crane controls together with duplicate travel controls arranged as in standard automotive practice.

An increase has been made in the maximum load rating, from 10 to 12½ tons at 10-ft. radius, available in the blocked condition, using the easily and quickly set up outrigger beams and jacks fitted to the specially built, box-section, welded chassis. The maximum load free on wheels at this radius is 7 tons. Power lowering is now standard.

Owing to the increasing demand from both home and export markets, for Jones mobile cranes, K and L Steelfounders and Engineers is to expand its engineering division. A long lease has been arranged for one of the Board of Trade factories at Newburn-on-Tyne, some five miles from Newcastle upon Tyne. This factory is situated on the Newburn Trading Estate. It has a floor area of 24,000 sq. ft. Due to the great shortage of skilled engineering personnel in the Letchworth area, and in conformity with Government policy, this expansion has been planned to take the work to where men are available. A gradual build up will continue through 1960. This is the second branch factory to be opened by K and L; the first was at Halstead, Essex, for steel castings production.

★

TRADING WITH U.S.S.R.

New Booklet Issued

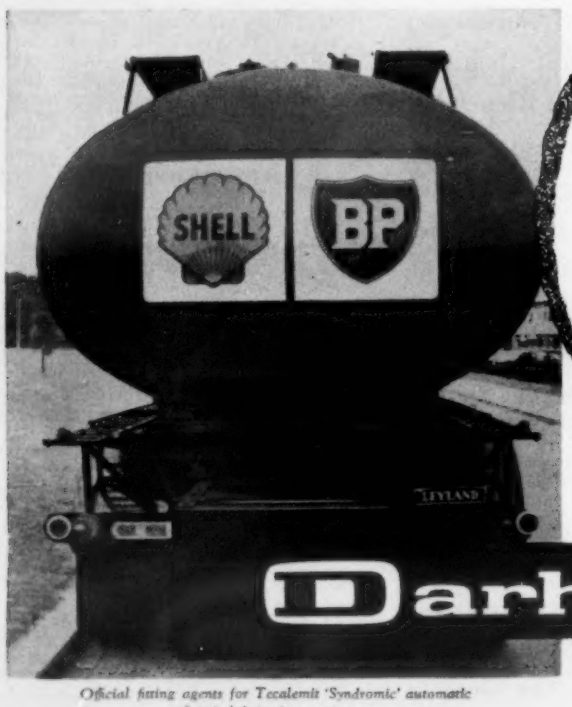
INTEREST in trade with Russia has increased greatly following the signature of the Anglo-Soviet Trade Agreement and the announcement of the plan for reciprocal trade fairs in Moscow and London for 1961. There will therefore be widespread interest in a comprehensive guide for British firms which has been prepared by the Russian Department of the London Chamber of Commerce entitled *Trading with the Soviet Union*.

The new booklet describes the Soviet trading system, the market potential and methods of trading. It also gives guidance on such matters as export/import licensing contract terms, documentation, patents, designs and trade marks, advertising and postal and telecommunications services. The appendices, which gather together a mass of information only obtainable previously from many different sources of reference, include the text of the Anglo-Soviet Trade Agreement, 1959, the list of machinery and equipment for possible import into the Soviet Union from the U.K., the consumer goods quotas 1959/60, lists and particulars of the Soviet Foreign Trade Corporations, the Soviet Economic Administrational Regions and the Soviet Peoples' Economic Councils, the Strategic Embargo List, information on the All Union Chamber of Commerce of the U.S.S.R. and the latest trade figures.

Copies of *Trading with the Soviet Union* cost 5s. post free from the Russian Department, London Chamber of Commerce, 69 Cannon Street, London, E.C.4, or through any Chamber of Commerce affiliated to the Association of British Chambers of Commerce.

Joseph Lucas (Electrical), Limited, has announced the formation of a semi-conductor division in conjunction with its associated company, G. and E. Bradley, Limited. The existing range and all future developments of silicon rectifiers manufactured by Lucas will in future be marketed by G. and E. Bradley, Limited, Semi-Conductor Division, Electral House, Neasden Lane, London, N.W.10 (Telephone Gladstone 0012.)

With an end in view...



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...about tanks

When industry enquires about the supply of road tanks, transportable tanks and storage tanks, more often than not they enquire of Darham.

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Darham are known for the dependability in constructing tanks for the transporting or storage of liquids and powders. Much of the success of a Darham tank can be attributed to the Technical Advisory Service of Designers and Engineers, who study every individual requirement.

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FUEL-CELL TRACTOR

Allis-Chalmers Development

FUEL cells, which are expected to provide a new and more efficient source of electrical power, could be used at once to drive cars, buses, lorries and tractors, according to Dr. K. Ihrig, research vice-president of Allis-Chalmers Manufacturing Company. The occasion was a demonstration of a heavy-duty tractor powered by self-contained fuel cells. The vehicle is driven by an electric motor drawing current from 1,008 continuously producing fuel cells in 112 units of nine cells each. Electricity in the fuel cells is created by piping in oxygen from separate tanks and nitrogen from a propane tank. These gases are fed to an anode electrode and absorbed by a catalyst on the electrode. A reaction follows which releases a stream of electrons (direct current) to the external circuit. The current then flows to a plated aluminium bus bar, which passes over each fuel cell, and to a controller.

The controller measures 21 in. by 11 in. by 8 in. and regulates the electricity supplied to a 20-h.p. motor. It permits the driver to regulate speed or reverse the vehicle by reversing the polarity. Using the speed control, the operator places the four banks of cells in series or parallel operation, varying the amount of current going to the motor.

Allis-Chalmers fuel-cell tractor operating on a mixture of gases, largely propane and oxygen, weighs 5,270 lb. and develops 3,000 lb. drawbar pull. The series-parallel speed regulator and reverser can be seen to the driver's left

Advantages

The big advantage claimed for the fuel-cell power plant is that it is much more efficient than petrol or diesel engines, since the chemical energy is converted directly into kinetic energy. Petrol and diesel engines give off much of their energy in heat. The most efficient diesel converts only about 40 per cent of the chemical energy to kinetic energy, while it is claimed that it is possible to make use of 100 per cent of the energy in a chemical with the fuel cell. Dr. Ihrig said the fuel cell has no moving parts and thus, theoretically, could last for ever. He added that it is cheap to make, since its major parts can be built at tolerances of $\frac{1}{8}$ in., making it suitable for mass production; none of the components is complex; and it is easy to repair since a unit of nine connected cells can easily be pulled out and replaced.

Other advantages are that it is quiet and only slightly affected by extremes of temperature. It functions at normal temperatures. It lends itself to situations where the entire power plant is not wanted in the front part of a vehicle, since the fuel cells can be distributed in several places, such as along a frame or under mudguards. Each cell is 1 ft. square, $\frac{1}{4}$ in. thick and weighs 1.8 lb. It has an unlimited range, compared to the 80-mile range of the average battery-electric vehicle. It has high torque at starting, which is advantageous in some operations.

Lighter Than Battery-Electric

The prototype tractor is lighter than a battery-electric tractor, but heavier than a petrol-driven one. It actually weighs 5,270 lb. Dr. Ihrig said that no great effort had been made in this first vehicle to get or measure fuel economy, but the tractor had ploughed for 17 min. on about one-third of a gallon of propane, which he thought was satisfactory for a start. It operated at about 60 per cent efficiency, but could go to 80 per cent. Principal fuel source on the prototype tractor is a 3-gal. propane tank and oxygen from two tanks strapped to the lower side of the tractor, but it has been shown that air from the atmosphere could also be compressed and used. The prototype tractor has one large d.c. motor driving through the normal axle, but a more practical method would be to have smaller individual motors at each rear wheel. The total electrical output of the tractor is 15 kW and the tractive power is said to be 3,000 lb. at the drawbar on dynamometer.

Development History

What was probably the first fuel cell was described by Sir William Grove in 1839. Fifty years later particularly good results were reported by Ludwig Mond and Charles Langer, who obtained a relatively high current density of 6 amp. per sq. ft. with essentially the same type of cell, operating on hydrogen and oxygen. More recent fuel cell investigators included O. K. Davtyan in Russia (1946) and Francis Bacon in England, who demonstrated the fuel cell he has developed under the sponsorship of the National Research Development Corporation at Cambridge last August. Several other types of fuel cells are being investigated, including direct fuel cells utilising solid fuel, semi-direct cells which utilise gaseous fuel, and indirect cells using an oxidation-reduction (redox) system. A Netherlands researcher, Professor J. Ketelaar, thinks his system might well replace the petrol engine in cars within 25 years.

Engineers see in the fuel cell a valuable energy conversion method through the use of off-peak generator facilities to produce hydrogen and oxygen which can be stored, transported and used at will in fuel cells. Low-voltage constant loads of such electro-chemical processes as plating, water purification, galvanising and so on, could make use of this type of energy.

In transport, the electric motor possesses a number of advantages over the petrol or diesel engine, including higher speed, more rapid acceleration, quietness and, one of the most important of all in big cities, absence of noxious exhaust gases. However, the high capital cost of the electrical distribution system and the limited range possible with existing storage batteries has held back development. A fuel cell that could operate efficiently on petrol or oil and could be "recharged" by filling a tank might well reverse the present trend towards diesel locomotives and commercial road vehicles.

Looking into the Future

(Continued from page 5)

limited, that the impact of the motor car means the gradual reduction in numbers of omnibuses which can be economically operated.

Indeed, if one studies the situation in America, much justification can be found for that point of view. I do not think it necessarily follows. Car production grew at such a rate in the United States that overnight it became a dominant factor in their economy, but today road traffic engineers are having a new look at the problem. I am the last one to suggest that anything should be done to limit the freedom of the individual. If a man can afford a motor car and wants to drive it to work, by all means let him do it, but one has only to stand on any of our main roads in the morning or evening to see the stream of cars running into London (or any other big city), most of them with one passenger only, to realise that sooner or later there will be a change. It is up to us to provide an acceptable alternative, so that a man will drive his car to a convenient point, as he does now to a railway station, and there get on a comfortable, fast bus which will take him to his destination.

Fighting Back

Further increase in limited stop buses might be the answer, on the lines of what Green Line is doing, but with very great extension. It may be that minibuses as feeder services will help, and there may be considerable extension of these smaller one-man vehicles. One factor which has caused great loss of revenue to the bus operator is the increasing use by workers of their cars for journeys to and from their factories. Economically it can be easily proved that it is cheaper to go by bus, but when four or five people pool together and share the cost, the picture changes. True, this practice may be illegal, but it happens just the same. Indeed, in many cases, station wagons and even minibuses are being used in this manner, and it is difficult to see the trend being reversed.

At the other end of the scale, what is to be the upward limit in size? And are we to concentrate on giving comfort and refinement or on crowding as many people as possible into a given space? Here, of course, we meet complications brought about by human factors.

Manpower

We have seen recently a series of strikes over the number of standing passengers allowed. We have also an economic problem as to the maximum number of fare-paying passengers a conductor can reasonably be expected to cope with. There is also the problem as to the one-man bus. As you all know, in many countries this method has increasingly been adopted and works well, but it works much better when there is a single fare structure, and would indeed be impossible with the complexity of fare stages and prices on a typical city bus.

These are all factors which materially affect design problems. It is also important to introduce new design features at the right time. It is sometimes as bad to be too early as too late. My own company, shortly after the war, designed and built a prototype double-deck bus with the entrance in front of the front wheel, and it was shown to a number of interested people. We were strongly advised from many sources that we were wrong. In particular, the danger to passengers being run over by the front wheels was cited as a major disadvantage. Some of our friends in Government circles were particularly hot on this point. We abandoned the idea. Now our great rivals with their Atlantean omnibus are proving how wrong we all were.

I believe the omnibus will always be with us. It is a safe, fast, comfortable method of travel, and the British omnibus or coach is certainly the finest in the world. At long last in this country it is being appreciated that roads must be adequate and suitable for modern transport, that they are in fact highways and not huge car parks. I find it a fascinating industry to be engaged in, and I am sure all members of the Omnibus Society, whether they operate, manufacture, or are merely enthusiastic amateurs, share with me that general view.

Introduced at this year's National Boat Show were Permali fully impregnated and densified wood laminates for small boat fittings. This application of the material, known for over 25 years in the chemical, electrical and general engineering industries, is being developed by Ansell Jones, Limited, Walsall. First items consist of lightweight blocks and cleats. The laminated wood is claimed to be highly resistant to moisture and unaffected by exposure or immersion in water, oil and chemical solutions. No varnishing or other forms of maintenance are necessary and little or no increase in cost is involved compared with other forms of wood or rust-proof metals.

Everything's on the up and up...

Leyland's latest CS3 Comet which has just replaced the truck referred to below — and which should prove an even greater money-spinner.

... except TRANSPORT COSTS

"Our only overhead that hasn't risen in the last 4 years"
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During four years of rising prices, Messrs. H. Polan & Co. Ltd., manufacturers of sheet lead and lead pipes, stabilised only one overhead — transport costs. And they did it by standardizing their fleet on Leyland Comets.
Mind you, they took no chances. Before the switch-over in 1955, the Comet's operating costs were carefully compared with other makes.
And the result? Identical tests, over 60,000 miles in two years, on a Comet and a mass-produced long-wheelbase 7-ton diesel, showed that although the Comet's initial price was some £200 more, costs on fuel, routine maintenance and repairs saved more than double that amount. *
Which proves once again Leyland's claim that a quality built truck always costs less.
* *Details on application.*

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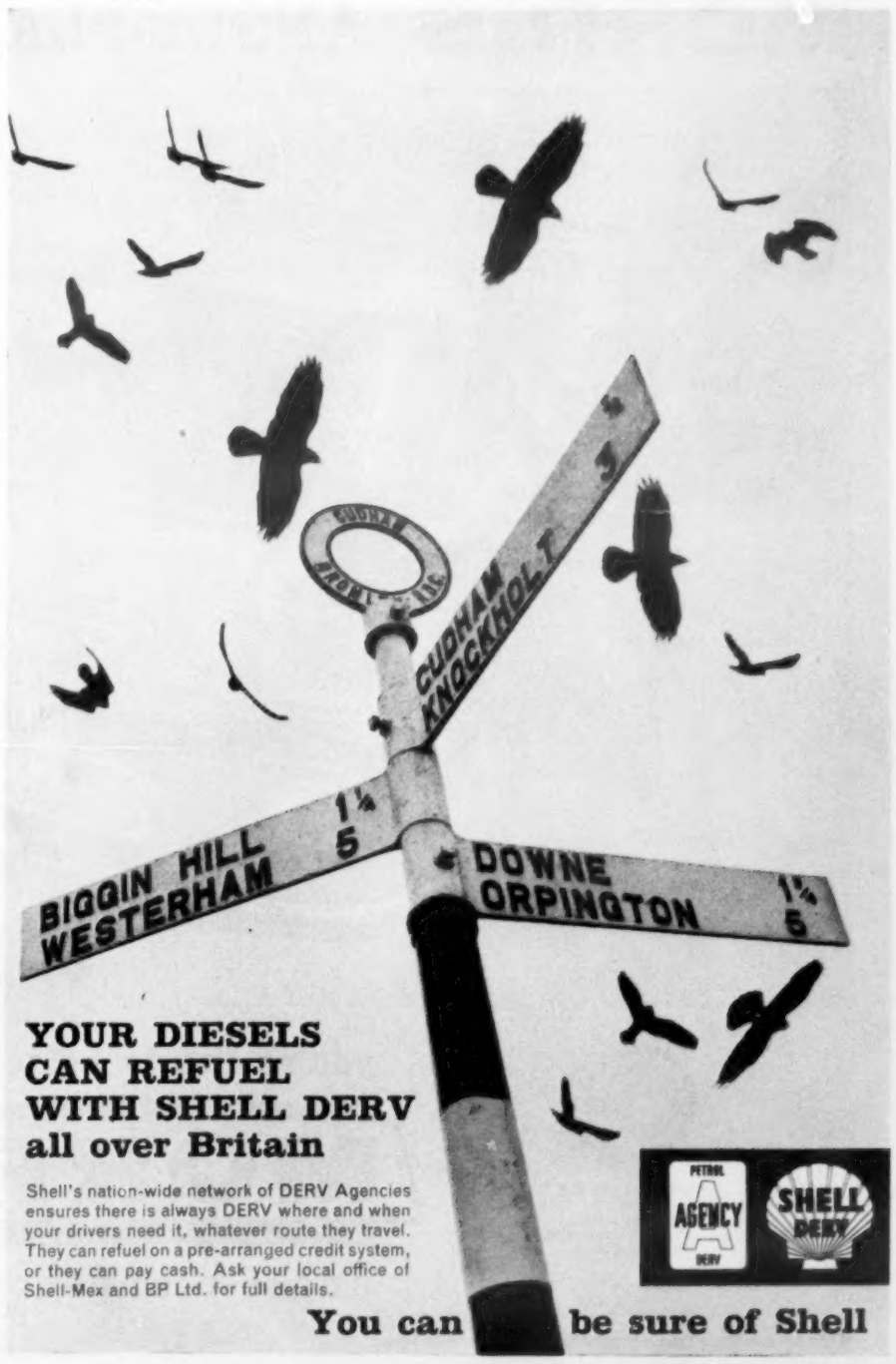

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Shell's nation-wide network of DERV Agencies ensures there is always DERV where and when your drivers need it, whatever route they travel. They can refuel on a pre-arranged credit system, or they can pay cash. Ask your local office of Shell-Mex and BP Ltd. for full details.

PETROL AGENCY DERV
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You can be sure of Shell

ROAD VEHICLE INDUSTRY

Castle Mills Modernisation Completed

RECENTLY completed by the North British Rubber Co., Limited, was the extensive programme of modernisation of the tyre and mechanicals divisions at its main plant at Castle Mills in central Edinburgh. Costing about £3 million, the programme has included modernisation of the tyre factory, including new and improved plant and additional tyre presses that have doubled curing capacity, and the building of a new hose factory, said to be the most modern in Europe, on 7¼ acres cleared in the centre of the 22-acre site. New types of hose for many industries, some of it developed to handle pressures up to 6,000 p.s.i., are now in production. Pictures of the factory appear on this page.

Hartridge Mobile Showroom Tour

A NEW Hartridge mobile showroom has just started an extensive tour of Europe. The first countries to be visited include Holland, Belgium, France and Germany, where resident Hartridge agents have arranged demonstrations throughout the principal cities and attendance at trade exhibitions. The outfit comprises a diesel-engined Austin Gipsy and Coventry Steel Caravan trailer; it carries a full range of diesel test and service equipment, with the interior laid out as a complete diesel workshop.

Reducing Battery Electrolyte Loss

NOW freely available from Catylators, Limited, Weydown Road, Haslemere, Surrey, are catalyst battery caps that are claimed to reduce or eliminate frequent topping up, acid-spray damage and hydrogen-explosion risk with lead-acid batteries. The Catylator is designed as a replacement of the normal vent plug and will fit most types of vehicle battery. It operates by recombining the oxygen-hydrogen mixture given off during charging into water and returning it to the cell; acid spray is also trapped and returned. Each Catylator cell cap costs 5s.

Speedometer Standard

JUST issued by the British Standards Institution is a new standard for speedometers and odometers for road vehicles (BS3190 : 1960). It is stated that the ever-changing variety of cars and light vans made the standardisation of their speedometers and odometers difficult; consequently Part 1 of this standard is somewhat restricted. It does, however, cover the drive, accuracy, protection, installation and general performance of instruments for this type of vehicle and there is a section on tests. Part 2 deals with speedometers and odometers for heavy commercial vehicles and in this field it was possible to lay down more comprehensive requirements and to achieve greater standardisation. Drive, installation, types of enclosure, mounting and overall dimensions, parallax dial presentation, rotation and deflection, insulation resistance, accuracy, performance in different conditions of temperature and humidity, index stability and identification marking are all dealt with, together with type and routine tests. Copies can be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London, W.1. Price 6s. (Postage extra to non-subscribers.)

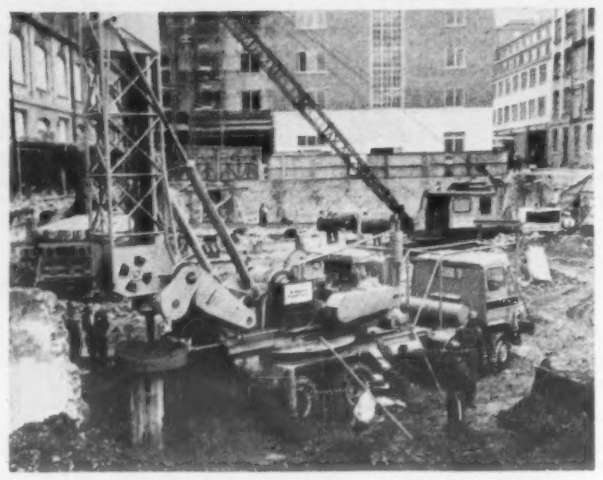
An aerial view of North British Rubber Company's Castle Mills, which occupies a 22-acre site in central Edinburgh and is bordered along its entire south side by the Union Canal; an extensive programme of modernisation of the company's tyre and mechanical divisions has just been completed and part of the new hose factory housing lathe armouring and making machines is seen in the picture on the right

Better Albion-Scammell Tractor Costs Less

EQUIPPED for operation with automatic-coupling Scammell trailers, a new Chieftain tractor has just been introduced by Albion Motors, Limited. Designated CH7TR, the new tractor will be marketed at a price some £40 cheaper than the previous Albion-Scammell FT111KTR tractor, which is now no longer in production. In addition to the improvements incorporated in all Albion Chieftain Series II models, including the new 94-h.p. Albion EN335 diesel engine, the new tractor is designed to operate at a higher maximum laden weight of 17¾ tons, allowing a 12-ton payload to be carried on a maximum-length trailer of 25 ft. It also has a shorter wheelbase of 7 ft. 8 in., giving better manoeuvrability, and has a larger fuel tank of 37 gal. capacity.

Anti-Dazzle on M1

EXTENSIVE testing of various forms of fencing by the Road Research Laboratory led eventually to the selection of expanded metal for anti-dazzle screens now in use experimentally on the motorway M1. The anti-dazzle fence, which has been erected between the carriageways on a two-mile stretch between Chalton Cross and the Dunstable Road junction near Luton, a section chosen because it includes bends and gradients, consists of expanded metal panels of galvanised hot-speltered steel supported by tubular steel poles set in concrete at 10-ft. intervals. Among the advantages claimed for expanded metal, which is produced by the Expanded Metal, Co., Limited, are a greater reduction of dazzle, neater appearance and that it does not obscure the view of oncoming traffic or the other side of the road.



A Foden 8-wheel chassis was selected and specially adapted to carry this 24-ton foundation boring unit of McKinney Foundations, which is seen at work at a building site at the Gower Street—Euston Road junction in London. The drilling rig incorporates a 78-ft. retractable jib and is capable of drilling shafts up to 8 ft. in diameter and 110 ft. in depth

European Coachbuilders to Meet

DURING the forthcoming 30th Geneva Motor Show, which will be open from March 10 to 20 and has attracted exhibitors from 18 countries, the European Coachbuilders' Association will be holding its traditional general assembly. The meeting of delegates from eight countries will be held on March 15 in the conference rooms of the Palais des Expositions.

K.L. Coolant Heater

WINTER accessories described in a brochure just issued by Key-Leather Co., Limited, includes a new immersion heater designed for fitting into the bottom radiator hose of motor vehicles. Named Gulf Stream, the unit is produced for mains operation in loadings from 200 to 600 watts, suitable for vans and larger commercial vehicles, at prices from three guineas to £3 19s.

Crossley Spares Stores

RECENTLY the Crossley spares stores was moved to the Maudslay Works, Alcester, Warwickshire. All orders and correspondence should in future be addressed to A.E.C. (Sales), Limited, at that address (telephone Alcester 181). Mr. Brierley, who has been responsible for the Crossley spares service for many years, will continue as depot stores supervisor at Alcester.

Motorised Ventilator

UNOBTRUSIVE appearance and simple fitting are features of a new motorised ventilator unit developed by Key-Leather Co., Limited, for fitting to goods and passenger vehicle bodies. The unit has a capacity of 250 cu. ft./min.; it is available for 12- and 24-volt systems and has a reversible motor so that it can be used for intake or extraction. Current consumption is said to be negligible and the unit is protected from the ingress of foreign matter.

Thornycroft Brochure in Spanish

COMMERCIAL acumen is shown by Transport Equipment (Thornycroft), Limited, in an attractive and comprehensive new brochure, in which captions and text are printed in Spanish as well as in English. The publication should be a valuable sales aid in Spanish-language countries, particularly South America, where Thornycroft vehicles are already in wide use.

Welding Rods for Cast Iron

FREE samples of new welding rods for jointing cast iron by bronze welding—Sifbronze Process 101 and Sifbronze Process 104—are offered in the current edition of *Sif-Tips* (Volume 25, Number 107, price 6d.), the house magazine of Suffolk Iron Foundry (1920), Limited, Stowmarket. This issue deals largely with the repair and recovery of road-vehicle parts using Sifbronze materials and processes.

Simms Export Record

CONTRIBUTING to the general rise in Britain's exports for 1959, which showed an increase of 5 per cent in value and of 4 per cent in volume over those of 1958, according to recently published Board of Trade figures, Simms Motor Units achieved a new record. The value of the company's direct exports alone showed an increase of 33½ per cent over the previous year (itself a record) while, due to certain small price reductions, the volume of exports was even higher at 35 per cent. In the period under review Simms exported to 71 countries.

MORRIS ANGLE-PLANNING for easy access and safety

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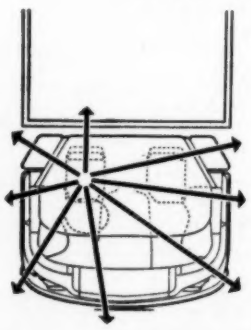

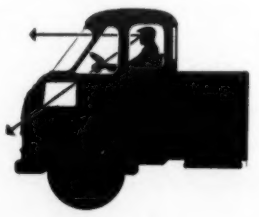

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MODERN AIRWAYS and COMMERCIAL AVIATION SECTION

R.A.F. TRANSPORT COMMAND

Its Responsibilities and Equipment

PRESENTING the seventeenth Brancker Memorial Lecture to the Institute of Transport in London last Monday, Air Marshal Sir Denis H. F. Barnett, Air Officer Commanding-in-Chief, R.A.F. Transport Command, outlined briefly its history since its formation in March, 1943, and went on to deal with its responsibilities both now and in the future. A primary task was to move the Royal Air Force and because every operation today was to a greater or lesser extent always a joint one, the task was that of conferring this air mobility, which might be strategic or tactical in its nature, upon the Defence Services as a whole.

Broadly, in terms of the range and speed required of the strategic transport fleet, the governing factor was the requirement to support the movement of the national deterrent force which demanded a performance matching as nearly as possible that of the V bomber force. In terms of numbers of aircraft required in the fleet, the pattern was governed by the need, in certain emergencies, to move large fractions of the army strategic reserve in formed units with specified vehicles and equipment in a single or closely coupled lift at short notice.

Demands on Aircraft

In terms of load carrying characteristics which needed representation within the strategic fleet, the bracket of requirement was a wide one. At one end of the scale was the need for as liberal a capability for the carriage of a mixed passenger and freight load as was compatible with the overriding need for really high performance—not only in range but in speed. At the other end of the scale was the need for a long-range carrier of heavy and bulky loads, with a cargo hold and loading doors large enough to accept the bulkiest necessary items in the weapon inventory. There were formidable difficulties in equating within a single aircraft the twin characteristics of high performance and bulk.

To the extent that Transport Command could remain free of special flights with special timings and could conduct transit business by means of its scheduled services—and particularly when it could thus maintain, as recently it could, a fast schedule to the Far East with slip crews and without night stops—its pattern of operations resembled that of an airline. But when committed to a series of special flights, of which it frequently had a disproportionate number out on the routes at one time, it more closely resembled the charter operator.

The essence of the tactical transport task was that it related to active operations within theatres and thus to air movement within theatres. It did not relate to movement between theatres except during the process of reinforcement. The essence, therefore, of the tactical transport fleet was that it was not just a straightforward carrying fleet. It must possess conspicuously diversified attributes to be able to discharge the multiplicity of medium-range and short-range transport roles demanded by joint land-air operations in an active theatre. The second characteristic of the tactical fleet was that it must be globally distributed and not solely home based.

Present Fleet

What aircraft had we today and what was in close prospect? In chronologically first place today, and in a proud and honourable position because of its achievement, stood the Hastings. For many years now, because of gaps in the inventory, it had had to double up in every role. It had been the backbone of the fleet and it would endure beyond the initial stage of introduction of the AW660 which was colloquially, but not yet quite correctly, referred to as its successor. Introduction of the first element of the AW660 was not to oust the Hastings or the Beverley, but to start to increase the size of the tactical fleet in order to match the army need for a greater tactical delivery in a single or closely-knit lift.

Next was the Beverley, another staunch and valuable instrument with a cargo hold which enabled it to perform tasks which nothing else they had could tackle. Once again, because of gaps in the inventory, the Beverley, like the Hastings, had perforce been called upon to undertake duties for which it was not intended. It was a tactical heavy freighter and parachuter—not a long-range heavy freighter. For that Transport Command awaited the outcome of the announced decision to order the Britannic.

Then were introduced first the Comet and then the Britannia. Until the start of the Britannia delivery, the Comet 2 reigned alone as the sole modern acquisition in the fleet. Although no more than medium range it demonstrated beyond question the startling operational value of modern high performance. To redress the current shortcomings of the fleet in range, and to satisfy in part the need for speed and load, the Britannia force was now building. When built, its effect, measured by way of example in terms of the time required for delivery of a typical element of reinforcement to the Far East, would be to halve that time. An important side effect also of the Britannia fleet, and later of the Britannic increment to it, would be to quench at last the need to misemploy the Hastings and the Beverley in roles for which they are unsuitable. These two would revert to what they do best, namely tactical transport at medium ranges.

Future Needs

Singling out a few aspects of future aircraft requirements Sir Denis referred to short-range transport for the more intimate forms of support of fighting troops in forward areas of engagement. It was in this family, because it was small today, that a more substantial expansion was needed, both in numbers and in types, than in any other. At the long-range end of the scale we had prime continuing need for really high and progressively contemporary performance in at least an element of our strategic fleet, in perpetuity.

This was not just a matter of wishing to keep up with neighbours, though it was clearly essential to do this if we were to exploit, and not squander, our acquired store of turbojet technique which he classed as a national asset, not merely a command asset, in the challenge which lay ahead. Neither was it just a matter of improving our strategic poise and our speed of execution of strategic reinforcement, though it would assuredly pay off progressively and handsomely in those directions also.

But it was not these coincidental benefits, great though they were, which were decisive by themselves. The inner implication was of a quite different order of importance. It bore upon our national wellbeing.

In the challenge which lay next ahead, the crucial element as always would be the timetable. At the material time and upon the best available project, the whole impact of backing and proving effort must be brought to bear. In this, Transport Command could and must be included to fight a forward action and not a rearguard. Only by that sort of co-ordinated backing would the nation achieve that favourable difference in timing which made the difference between a project which captured merely the imagination and one which, by its timetable of delivery captured the market and by corollary enabled its operators to capture also the passenger and freight markets.

Jet Service for P.I.A.

IMPROVED RESULTS ENCOURAGE DEVELOPMENTS

DURING the first week in March Pakistan International Airlines will commence a pure jet service from Karachi to London via Tehran, Beirut and Rome with Boeing 707 Intercontinental jets starting with a frequency of once a week and building up to three times a week by October of this year. This has been made possible through an agreement with Pan American World Airways. The operation is divided into two phases. In the first phase, from March to October, the Boeing will be available to P.I.A. on a trip lease basis. That means that both the airlines will be using the aircraft, P.I.A. for a once-weekly round trip to London and P.A.A. for other flights on its trans-atlantic routes. In the second phase which begins in October, the jet aircraft will be fully leased to P.I.A. so that it can operate it up to three times a week to London or on any other routes that may suit it better. After October the aircraft will fly in P.I.A. colours, but Pakistani cabin crews will operate from the very first flight. P.I.A. pilots and flight engineers have already started conversion training on Boeings in the United States.

P.I.A. expects the aircraft to be manned entirely by Pakistani crews not later than October of this year. Normally, indeed, the agreement would have been effective from that month, but P.A.A. agreed to the trip-lease feature beginning in March. It was considered most essential for P.I.A. to start as early as possible if it was to take full advantage of being amongst the first few to start jet operations on its route. Other features of the aircraft lease are that it is also open to P.I.A. to purchase the aircraft, the price being adjusted to allow for a part of the payments already made to apply for the purchase. In the initial stages the maintenance will be done by P.A.A. which will be paid at a rate based on hours flown. In addition, P.A.A. is allowed a reasonable return on its investment. To P.I.A. it simply means that an average load of 47 passengers each way plus normal mail and freight will allow the airline to break even—the Boeing Intercontinental's passenger capacity is 120. Air Commodore M. Nur Khan, who is managing director of P.I.A., has emphasised that this agreement is a straight lease and there is no question of any merger of any kind with P.A.A. It is a simple business agreement with mutual advantages.

The advantages of this agreement from the Pakistani viewpoint are many. P.I.A. is not in a position at the moment to purchase its own jets and the capital outlay involved is very large. Moreover, delivery time from most manufacturers is about 18 months which would leave it far behind. Through this agreement it is able to enter the jet field very much earlier than would have been otherwise possible. It is also the only way that it can introduce jets almost immediately without curtailing its existing operations and over-straining its manpower resources—particularly in the field of technical and flying personnel.

Additional Time

The lease agreement allows more time to study and assess the newer jet aircraft which will be available after two or three years when it will want to consider jet operations on its domestic services as well. In the meantime, P.I.A. Super-Constellations which will be released from the international services will be available for increased internal usage providing more passenger and cargo capacity between the two wings of the country. The introduction of a pure jet service was a major step for the airline and it had been encouraged to take it by the all-round progress recently made by P.I.A.

Traffic has increased to a great extent, operational and technical performance, as reflected in schedule regularity, has improved and the financial picture looks healthy. Traffic volume for the period April—December, 1959, showed an increase of 40 per cent as compared with the previous year. In November and December the airline had an on-time schedule regularity of 87 per cent. During the same period the average on-time schedule departure regularity of some of the main stations was: Karachi 94 per cent, Lahore 88 per cent, Rawalpindi 83 per cent, Peshawar 94 per cent, Dacca 92 per cent and Chittagong 97 per cent. Extended efforts on sales, improved service and regularity resulted in a net profit of £378,750 for April—December period as against a loss of £285,000 for that period of 1958.

The Pakistan Government has given a tangible example of confidence by its decision to subscribe further to the capital structure of the corporation by converting its present loans into share capital. This means that the issued share capital of the corporation will be increased from £3,750,000 to £6,750,000. The year ahead is unlikely to be easy. P.I.A. will be introducing two new types of aircraft —the Boeing and the Fokker Friendship—involving substantial initial development costs and much careful planning.

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LETTERS TO THE EDITOR

The Great Central Line

The Editor is always glad to receive letters from readers on subjects germane to the transport industry, but these should be written as concisely as possible. The opinions expressed therein must not, however, be regarded as having editorial endorsement. Where correspondents desire to use a nom-de-plume it is essential that the Editor should be informed of the name and full address of the writer as indication of good faith.

SIR,—The article on the Great Central main line in your January 2 issue excites further interest in a line that played a noble and vital part in the winning of two wars against Prussian aggression. In that respect, no railway operator in the special traffic departments of any of the headquarters, divisional or district offices, whether he is still in harness or not, could ever fail to appreciate fully its unquestionable value as a direct and most helpful link in the chain of communications between Northern and Southern England. For many months prior to the invasion of the Normandy beaches, the southern and south-eastern counties became not merely the training area for all types of the combined services, but a first line of defence against a promised invasion. Without that vital link through the heart of England, Banbury, Reading and Basingstoke, one shivers at the thought of what may have happened had entire dependence been placed upon the London exchange junctions, and alternative routes remotely situated towards the west country. There were movements of gigantic proportions from and two Merseyside and Clydeside ports, and from and to the areas of the Northern and Scottish Commands that could never have been conducted with the same speed and economy had the major reliance been put upon the routes via London, subjected, as they often were, to interference from the enemy.

Then there was the leave train, or the "Newcastle—Ashford," to give it its alternative title, that conveyed literally thousands of personnel clear of the London area, whether on furlough or duty move. Taking some 12 hours on the journey, after departures at 8.45 a.m., Newcastle and 8.15 a.m. Ashford (Kent), the train travelled via Durham, York, Pontefract, Sheffield Victoria, where it reversed, Banbury, Reading (G.W.), Redhill, where it again reversed, and Tonbridge, and observed a number of unusual intermediate stops at points like Sherburn-in-Elmet and Heyford, as additional to the large townships and traffic centres, in order to provide facilities for the training camps and establishments that had arisen. Although fundamentally a War Office train, it appeared in the columns of Bradshaw, but always with the reminder that it possessed limited accommodation for civilians, and was liable to withdrawal without prior notification. L.N.E.R. and Southern Railway vestibule passenger stock was provided to work alternately and a maximum of 11 coaches was imposed to avoid double-heading over the stiff grades between Guildford and Reigate, and to reduce to a minimum the operating problems associated with reversing at the comparatively short platforms then in vogue at Redhill.

The Southern Railway engined the train to and from Woodford and Hinton (now Woodford Halse), employing for the purpose a class U Mogul type as a regular duty, the arrangement representing a definite economy in engine working at a time when coal supplies and provision of engine crews were knotty problems. After France had been cleared of enemy occupation and Southampton reopened as a fully fledged passenger port, the train was diverted thereto and became a most useful medium of disposing to their midland and northern homes, repatriated prisoners from the eastern theatres of war. Transport economists and critics may rightly question the wisdom of the London extension of the Great Central in the light of all that transpired after the 1914-18 war, but there were occasions, and the 1939-45 war was one, when practicians in rail traffic movement in times of duress, could bless Sir Sam Fay, and whisper quietly to themselves "Thank God for the G.C."

Peacetime Facilities

The more peaceful functions performed by the line received worthy comment in the article, particularly as cross-country rail travel between north and south considerably benefited by its geographical alignment through the Midlands, as it was in 1901 that the first through Newcastle—Bournemouth restaurant car train began to operate, with the G.C. providing its latest corridor stock. For a while the company also experimented with a through Manchester—Deal coach which became incorporated at Banbury with the Birkenhead—Deal through train; it was withdrawn before long, probably in view of the alternative through facilities granted by the London and North Western and Midland companies with the Kentish resort. And in addition to the through services to South Wales via Banbury and Cheltenham, there is recorded a through Eastern period excursion to Plymouth, when the staff at North Road Station saw, probably for the first time, a Robinson Atlantic at the head of the train. The legendary Aberdeen—Penzance, to which the article refers, was, in my experience, a through carriage attached to the 10.20 a.m. Aberdeen—Kings Cross, detached at York (Mondays to Fridays), at Newcastle (Saturdays only), to be married up with the 12.16 p.m. Glasgow Queen Street—Penzance train that worked through to Swindon via Sheffield and Banbury, to be joined thereat to the 9.50 p.m. Paddington—Penzance. How many passengers travelled right through may be left to the imagination, but in passing one must not forget the brilliant effort to build up the Marylebone—Stratford-on-Avon business by a through train, via Woodford and the former Stratford-on-Avon and Midland Junction Railway.

Enough of nostalgic wanderings; they have their usefulness in reminding the younger generations of transport users and students of how the Briton delighted in every evidence of lively competition, and viewed with much concern and heavy frowns any suggestion for rationalisation of services, justifying his line of thought largely upon the principle that someone at least benefited by the duplication or the triplications. No one disputes this, but the unpleasant feature of post 1939-45 war transport is that neither the transport provider, nor in the long run the transport user, can afford the luxuries of undiluted competition after the extravagant fashion of the latter 19th-century decades, or the opening decades of the present, a thought that could be widened and developed to include a proper understanding of the real function of public transport in the face of hectic competition in the international field. At any rate the value of the G.C. main line need not be depreciated by the mere fact of change of function, but rather be granted a revaluation in the pattern of improved and still faster through rail services, between the north and the ever-growing popular south coast. Finally, the value of railway history as a subject of close study in national economics is receiving increasing attention at many educational levels, and one hopes that the young student in those matters may not have to wait too long for a complete and authoritative volume on the why and the wherefore of the Great Central Railway, and of how it made the best of its relatively short-lived main-line status. Yours faithfully,

A. F. WALLIS.

31 *Fengates Road,*
Redhill, Surrey.

Demand for Service

SIR,—Much has been written concerning the steady stifling of the Great Central through the years, culminating in a fairly useless makeshift passenger service that presumably will be completely removed as soon as it is judged possible to do so under a suitable smoke cloud. Personally, I have used the G.C. as much as possible, partly because for years now the L.M.R. timekeeping has been very bad (especially in the evenings) and partly because the 7.20 p.m. out of Rugby Central was the last train from that town (only 82 miles from London) to allow me to get home in Surrey with certainty that night (the two later ones from Rugby Midland have both stranded me in London through late arrivals) but even this train has disappeared now.

If only there could be a 7.30 p.m. departure from Nottingham Victoria, Leicester 8 p.m., and Rugby 8.20 p.m., arriving Marylebone 10.20 p.m., this would be ideal, because even allowing for deliberately easy-paced timing on the G.C. this would have given a through service from both Nottingham and Leicester, better than the Midland arrival at St. Pancras of 10.55 p.m. which, even if on time (unlikely) makes it very difficult to get across London and catch last trains from other termini.

Perhaps it is not too late to arrange for such a train in the new G.C. time sheets (which, to time of writing, appear to be unobtainable to the public, and even at Euston details of the recent changes were only to hand after diligent and puzzled search by all the inquiry office staff.—Yours faithfully,

J. C. SELFE.

194 *Brighton Road,*
Coulsdon, Surrey.

Great Central Capacity

SIR,—I am surprised at your correspondent's saying that more traffic could not be carried on the former G.C. joint lines into London from High Wycombe and Aylesbury. Between Ruislip and Wycombe on the passenger side there are one through express hourly between London and Birmingham and one local all-stations hourly from Marylebone, augmented at the peaks. Semi-fasts are almost non-existent, one departure from Paddington and two arrivals. There are also some freights, but as the line is double throughout with a liberal supply of loops the traffic represents nothing like the full capacity of this route.

South from Aylesbury, quadrupling south of Watford South Junction and eliminating engine-changing at Rickmansworth will bring improved capacity. It is unlikely, peak periods apart, that London Transport will run more than four trains an hour to Chalfont with alternate trains going to Amersham or Chesham. Taking into account the severe speed restriction at Rickmansworth an up express passing Chalfont 10 minutes after the departure of an up local is hardly likely to catch the latter before it reaches the four-track section, or if it did the delay would be slight, nor would a local electric catch a goods train which had left 10 minutes before it.

Another writer says the G.C. has no direct access to London marshalling yards. There is in fact a spur to the Dudding Hill line at Neasden. Existing space and moderate earthworks at Neasden would permit a spur facing towards Cricklewood additional to or instead of the existing one which gives a direct run to Acton (W.R.) or the Southern Region's Feltham. Trains coming up by the G.W./G.C. route have alternative routes in south of Greenford and direct access to the Southern Region via Olympia, without crossing the Western Region main line on the level, via the North Acton to Shepherds Bush line. There is also the possibility of freight trains travelling via Woodford, Banbury and Oxford.—Yours faithfully,

R. G. R. CALVERT.

45 *Woodwaye,*
Oxhey,
Watford, Herts

Where are the 100-m.p.h. Trains?

SIR,—A clause in the article which appeared under the heading "Reporting Railway Progress" on the back of the January 30 issue of MODERN TRANSPORT should not pass without comment. ". . . But the significant thing about this equipment is not the quantity which is being made; nor is it just the fact that it is new, and *usually more powerful* or more efficient than the old which it replaces. . . ." Does this apply, I wonder, to the vast fleet of diesel locomotives now being built? With one notable exception it appears that British Railways is merely replacing like with like; however, that a glimmer of light has penetrated is apparent from the "uprating" of some of the new types. I am open to correction here, but I rather gather that this uprating shortens the life of the engine considerably.

On the Great Eastern line the 2,000-h.p. diesels can do nothing that the Britannia Pacifics cannot equal with ease and even beat on the overall run; a B.1 class 4-6-0 can keep the fastest schedules when pressed, and as we are told the diesels have to work almost flat out to keep time, we must surely conclude that these costly products of the modern age are equivalent to no more than a moderately powered 4-6-0. Is this progress? On the South Eastern division, the 1,160-h.p. diesels have to double-head when loaded to more than about seven coaches, and 60 m.p.h. appears to be the sum total of their achievements on level track. Where are the 100-m.p.h. trains of the future?—Yours faithfully,

JAMES G. TAWSE.

30 *Montagu Square, W.1.*

BOOK NOTICES

Latest Editions of Standard Reference Books

WHO'S WHO IN THE MOTOR INDUSTRY. Fourth Edition. (London: Temple Press, Limited, Bowling Green Lane, E.C.1, in collaboration with *The Motor* and *The Commercial Motor*. Price 42s. net.) This new edition incorporates many changes of appointments, company alignments, addresses and telephone numbers which have taken place in the industry recently and offers an up-to-date source of accurate information covering all sections of British motoring. Value of the directory is enhanced by the inclusion of a section on the motor industry overseas, listing overseas subsidiary and associate companies of the British motor manufacturers, and names of their directors and chief executives.

* * *

HOTELS AND RESTAURANTS IN THE BRITISH ISLES, 1960. (London: British Travel and Holidays Association, 64-65 St. James Street, S.W.1. Price 6s.). This guide does not set out to include every hotel and restaurant in the United Kingdom—despite the title the Irish Republic is not included—but it contains a very representative selection. It is intended particularly for tourists but it has, over the years, become also a very useful reference book for business purposes.

* * *

OVERSEAS RAILWAYS, 1959. (London. Tothill Press, Limited, 33 Tothill Street, S.W.1. Price 7s. 6d.) This annual publication worthily maintains the standard set by its predecessors. Latest railway developments in certain countries of the American continent, in Australia, New Zealand, the Far East and Africa are succinctly described, in many cases by the administrative chiefs of the undertakings concerned. Illustrations in line and half-tone are a feature of a work which is both interesting and instructive.

* * *

ROAD TRANSPORT LAW. By L. D. Kitchin, revised by E. K. Wenlock. (London: Iliffe and Sons, Limited, Dorset House, Stamford Street, S.E.1. Price 13s. 6d. net.) Published on behalf of our contemporary *Motor Transport*, this standard work of reference appears in a 12th edition after an interval of two years. The law is stated at September, 1959. The format and content of the book is unchanged save where it is brought up to date. It is possible to think of additional provisions regulating the operation of goods vehicles which might appropriately be included.

* * *

CATALOGUE PHILATELIQUE DE TIMBRES FERROVIAIRES. (Paris: Librairie Ferroviaire et Sociale, 11 Rue de Milan, 9e. Price 5 new French francs.) Thematic philately is becoming increasingly popular and undoubtedly the ever-growing number of stamps is making the assembly of a general collection an increasingly daunting proposition. Railway subjects have always attracted collectors who have been able to widen or narrow their scope by deciding whether to keep strictly to actual trains or to be more catholic and include associated subjects. This handy catalogue follows the latter course and is remarkably comprehensive. As is generally the case, its colour descriptions do not always agree with those used in other countries, but such matters have always provided subjects for amiable argument.

* * *

VULCAN-SINCLAIR FLUIDRIVE. (Middlesex: The Fluidrive Engineering Co., Limited, Worton Road, Isleworth. Gratis.) A useful addition to the bookshelf of all those having to do with or interested in industrial or automotive transmission mechanisms, which in view of the widely increasing use of fluid couplings, particularly in British Railways vehicles, makes a timely appearance from a company which pioneered their development in this country. Although dealing largely with the wide scope and variety of Vulcan-Sinclair fluid couplings, the book also provides much general background information and historical matter.

* * *

ALUMINIUM BUSBAR. By A. G. Thomas, B.Sc. (Eng.), A.M.I.E.E., A.M.(Amer.)I.E.E., and P. J. H. Rata, B.Sc.(Eng.), A.C.G.I. (London: Hutchinson and Co. (Publishers), Limited, 178-202 Great Portland Street, W.1, for Northern Aluminium Co., Limited. Price 21s. net.) Aluminium is being used increasingly for busbar, mainly because it is cheaper than copper but also because of its lighter weight and resistance to corrosion, both of which are of importance in certain fields of application. The appearance of this authoritative work is timely; it provides comprehensive data on the design, construction and installation of aluminium and aluminium-alloy busbar, including much material not hitherto published.

* * *

FORTY YEARS OF MOTORING. By Edward Young. (London: Stanley Paul and Co., Limited, 178-202 Great Portland Street, W.1. Price 25s. net.) This book, written to mark the 40th anniversary of the National Benzole Co., Limited, covers the development of motor cars and all aspects of motoring from 1919 to the present and weaves into its pages the story of the discovery of benzole and its development and marketing as a rival motor spirit to petrol by the National Benzole Company. A fine assortment of 150 photographs adds greatly to the interest of very readable text.

* * *

WORLD OF MEANING. (London: S. Smith and Sons (England), Limited, Cricklewood, N.W.2.) Few people perhaps realise the very wide extent of the work undertaken by the Smiths industrial enterprise and this new book published by the parent concern is designed to provide a graphic impression of the scope of the organisation, which employs some 20,000 people. In aircraft and road, rail and marine transport, in industry and the home in most parts of the world—a third of the group's output is exported directly—a multitude of Smiths products is in daily use under such various well-known trade marks as Bluecol, Sectric, David Harcourt, Desynn, Empire and Astral watches, K.L.G., Kelvin Hughes, Petroflex, Radiomobile and Unitubes. The book is divided into three sections covering the principal fields of activity, research and technological training and a summary of all the things made by Smiths.

* * *

BELGIUM—HANDBOOK FOR MOTORISTS. Edited by R. M. De Puydt. (Belgium: Belgian Marine Administration, 76 Avenue de la Couronne, Brussels, 5. Gratis.) Since 1947, a year which marked the beginning of the second century of regular cross-Channel service by the Ostend-Dover Line, this attractive and useful handbook has been published for the Belgian Marine Administration for the assistance of the British motorist in Belgium. The contents comprise information on the 10 vessels of the Ostend-Dover fleet and particulars of sailing times, details of car-carrying trains from Ostend into Central Europe, much useful touring information including maps of tourist centres and general information on interesting events in 1960.

* * *

THE LEAD STORAGE BATTERY. Fourth Edition. By H. G. Brown, A.M.I.E.E. (Cheshire: John Sherratt and Son, The St. Anne's Press, Park Road, Altrincham. Price 24s.) In this book the theory and practice of the lead-lead peroxide couple discovered by Planté and Faure and applied to lead-acid batteries are comprehensively covered. Information is given on materials and methods of construction most suited to batteries for different types of service and there is valuable guidance on care and maintenance necessary to provide maximum efficiency and length of service.

* * *

RADAR AND COLLISION. A handbook for Mariners. By Capitaine de Frégate L. Oudet. (London: Hollis and Carter, Limited, 25 Ashley Place, S.W.1. Price 15s.) It is only right to commence by congratulating the author, who is in the French Navy, and his translator René Hague upon the production of a most readable book on a subject which could well have been dulled. There is indeed a nice touch of humour in some of the comments which serves to underline the vigorous points made. There must, it is true, be some points on which there will not be universal agreement as Captain F. J. Wylie, president of the Institute of Navigation, indicates in his foreword, but they certainly provoke new thought in a field of navigation where there is still much scope for exploration.

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JAPANESE NATIONAL RAILWAYS — FACTS AND FIGURES. (Tokyo, Japan: Foreign Department, Japanese National Railways, Maranonchi.) Issued in November last, this 64-page pocket booklet, dressed in a cover depicting the graphical timetable for the Tokyo—Atami line, contains information from organisation charts to route maps, from a general description to an account of the proposed 155-m.p.h. 4 ft. 8½ in. Tokaido line, on which passenger trains will beat overall air time. This is a railway system still developing and worthy of close statistical study. This admirable booklet helps to visualise its progress to a considerable degree.

* * *

THE ASHBY-DE-LA-ZOUCH CANAL AND ITS RAILWAYS. By C. R. Clinker and Charles Hadfield. (Leicester: The Leicester Archaeological and Historical Society, The Guildhall. Price 3s. 6d.) A descriptive article from the present authors on the Ashby Canal tramroads appeared some years ago in these columns. Here is an admirable pamphlet, a reprint from the transactions of its learned publisher, which tells the story in more historical detail with no fewer than 107 of the notes with which historians delight to adorn their text. There are two useful sketch maps. We venture again to express the view that if this sort of history is to be made available to the general public it would be of wide interest at even twice the price if some good half-tone illustrations relevant to the subject matter were included. In fact some philistines would exchange a picture or two for a chaldron wagon loaded with footnotes.

* * *

NARROW GAUGE RAILWAYS OF EUROPE. By Peter Allen and P. B. Whitehouse. (Hampton Court, Surrey: Ian Allan, Limited, Craven House. Price 35s.) Narrow-gauge railways have a subtle appeal to many who ignore the full-scale machine; the 4 ft. 8½ in. gauge may represent just another railway, but the narrower spoor is something that has to be followed until the last quaint locomotive and the last bizarre station has been run to earth. In this volume there is available to all a magnificent record of narrow-gauge operation this side of the Iron Curtain, produced in 172 beautifully illustrated pages, with a number of maps and a couple of coloured plates. Practically every picture is from a stance new to us and it would be difficult to praise this volume too highly. It gives very complete lists of what the tourist interested in railways should look for and shows enough in the photographs to titillate the appetite. Rack locomotives, tram locomotives, vast tender engines (including a 4-8-4 for Brazil on trial in France), 2 ft. 5½ in. gauge rails, and rails of no gauge at all, on the Lartigue system in the Loire, catch the eye in quick succession. The authors are broad-minded, too, for the 4 ft. 8½ in. gauge is included in one instance, in the case of the Langreo Railway in Spain, for in that land of 5 ft. 6 in. gauge it *is* a narrow gauge. A view of the foot of this railway's 1 in 8 rope-worked incline plane between San Pedro and Florida bears an absurd resemblance to our own 1 in 4 Combe Row incline on the West Somerset Mineral Railway in its heyday. An absorbing book which it is hard to put down before midnight.

★

FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

Saro (Anglesey)

Saunders-Roe (Anglesey), Limited, of Beaumaris, Anglesey, announces that the name of the company has been changed to Saro (Anglesey), Limited. The decision to make the change has been taken only to avoid any confusion which might arise between them and the firm of Saunders-Roe, Limited, of Cowes, Isle of Wight, with whom it was formerly associated. There is to be no change in the board, management or policy, interests and activities of the company. Saro (Anglesey) manufactures marine craft, aircraft refuellers and road tankers, pontoon bridging equipment, ships' hatch covers and stabilisers, decompression chambers, welded aluminium and steel fabrications and a wide variety of engineering products.

P. and O. Steam Navigation

At a meeting of the board of the Peninsular and Oriental Steam Navigation Company a second interim dividend of 8 per cent was declared on the deferred stock on account of the year ended September 30, 1959, in lieu of a final dividend (8 per cent). It is not proposed to recommend any further dividend in respect of 1959 and the total distribution for the year is thus 11 per cent (same). The dividend is declared as a second interim instead of the normal final dividend because of technical reasons connected with the offer that is being made to the minority shareholders in Orient Steam Navigation Co., Limited. The annual report and accounts will not be available until March 9 but the board is able to state that the net profit of the group for the year ended September 30, 1959, after all charges including taxation was about £3,000,000 (£6,646,971) and the profit applicable to the P. and O. deferred stock was approximately £2,100,000 (£5,184,862).

SOCIAL AND PERSONAL

Institute of Transport 1960 Congress

IT is announced that the 1960 congress of the Institute of Transport, to be held in London for the first time since 1925, will be opened by Mr. Ernest Marples, the Minister of Transport, on April 27 at the Waldorf Hotel, where the congress will be held. Three papers on the future of transport will be discussed. General Sir Brian Robertson, a vice-president of the Institute, has chosen as the theme for his paper the title "Some Thoughts on the Future of Inland Transport." It will be delivered on April 27 at 10 a.m. Sir Donald Anderson, past president, Chamber of Shipping, is to speak on "British Shipping—a National Service or a Commercial Enterprise?" on April 28 at 10 a.m.; and Mr. Peter Masefield, president, Royal Aeronautical Society, past-president, Institute of Transport, is to present a paper on "British Transport Aeronautics—Looking Ahead" on April 28 at 11 a.m. An informal assembly will be held at the Waldorf Hotel on April 26, a reception at Guildhall on April 27 and the annual dinner of the Institute will take place at the Dorchester Hotel on April 28, with the Minister of Transport as the guest of honour. Facilities have been arranged for visits to several transport or industrial establishments in the London area.

* * *

Mr. F. J. Pepper has been appointed mechanical engineer (general) on the British Railways central staff. Mr. Pepper had been carriage and wagon engineer, Southern Region, B.R., since 1956. He joined the Midland Railway in 1919 as a privileged apprentice. He was placed on outside inspection of locomotive building on contract, served in the drawing office at Derby, the experimental section and then on tank production work at Crewe in 1939. In 1947 Mr. Pepper was appointed works manager, Kilmarnock, and was next outdoor carriage and wagon assistant to the mechanical and electrical engineer (Scotland), L.M.S.R., Glasgow. On nationalisation, he was appointed outdoor superintendent, c. and w.e. department, Glasgow, Scottish Region, and during 1950-51 was acting carriage and wagon engineer. In July of the latter year he was appointed executive officer, wagons, at British Transport Commission headquarters, and became assistant carriage and wagon engineer, Southern Region, in February, 1955.

Mr. F. J. Pepper

* * *

The British Transport Commission announces the following appointments:

Mr. P. I. Welding, to be principal scientific officer for operational research.

Mr. J. F. Thomson, to be traffic costing officer, York.

* * *

We record with regret the death, at the age of 76, of Mr. Thomas Wakefield, who founded Wakefield's Motors, Limited, on Tyneside in 1922. He sold his interest to Tynemouth and District Transport Co., Limited, a subsidiary of the Northern General Transport Co., Limited, in 1930.

* * *

Another important step has been taken by the North Eastern Region of British Railways towards developing the transport by rail of materials in major quantities, both solids and liquids, to meet the growing changeover of industry from individual packaging to mass movement in bulk. Two specialist sales assistants have been appointed to the staff of the commercial officer, one to devote himself exclusively to the expansion of carryings of solids in bulk, which will include study of special equipment for economical transfer between rail and road, the other to specialise on bulk liquids.

* * *

The second meeting of the special sub-committee on standardisation, appointed at the conference of the general managers of the railways of Southern and Central Africa in 1955, has just concluded its business. The committee is at present concerned with standardisation of wagon types and other matters relating to rolling stock.

The delegates were Messrs. J. Pierre, director of material, Compagnie du Chemin du Fer du Bas-Congo au Katanga; Lamas de Oliviera Viana, Companhia do Caminho de Ferro de Benguela; L. Bouvry, chief engineer, Compagnie des Chemin du Fer Congo Superieur aux Grands Lacs Africains; A. P. Gomes Teixeira and A. A. R. deGouveia, Caminhos de Ferro e Transportes de Provincia de Mocambique; W. E. Bulman, assistant chief mechanical engineer (technical), East African Railways and Harbours; E. Hudson, chief mechanical engineer, Nyasaland Railways; C. T. Long, chief mechanical engineer, South African Railways and Harbours. The Rhodesia Railways representatives were Messrs. H. J. Castle, chief mechanical engineer (chairman of the sub-committee), H. J. L. Dolan, assistant chief mechanical engineer, and R. H. W. Burt, chief draughtsman.

* * *

Mr. M. S. Hatchell, M.I.Mech.E., M.I.Loco.E., has been appointed mechanical and electrical engineer (workshops), Southern Region, B.R., vice Mr. F. J. Pepper. He was educated at Haileybury College and began his engineering career as a pupil at Brighton locomotive works in 1920. After a period of inspection duties he was appointed assistant to the works manager at Eastleigh locomotive works. In 1938 Mr. Hatchell was transferred to Ashford (Kent) as assistant works manager and in 1941 he became carriage and wagon works manager, Eastleigh. A year later he was promoted to the post of works manager, Ashford. In 1946 Mr. Hatchell was appointed assistant to the chief mechanical engineer of the Southern Railway and in 1948 was transferred to Derby as principal assistant (locomotives) to the chief mechanical engineer, London Midland Region. After nearly five years at Derby Mr. Hatchell was appointed to the Scottish Region. In future he will be directly responsible for the construction and major overhaul of all rolling stock, that is, locomotives, carriages and wagons, on the Southern Region.

Mr. F. A. Burden, M.P., has joined the board of Eagle Overseas Airways, Limited.

* * *

We regret to record the death of Sir Giles Gilbert Scott, at the age of 79. Among his architectural achievements was the design of the present Waterloo Bridge in conjunction with Rendel, Palmer and Tritton.

* * *

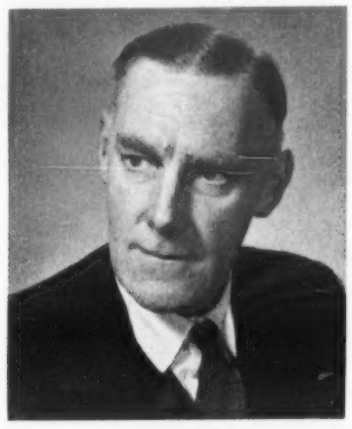
A reception was held at the Dorchester Hotel on February 9 by the chairman of the Nigerian Railway Corporation and Lady Emerson to bid farewell to Mr. T. I. Awosika, London representative of the Corporation, and to welcome his successor, Mr. G. C. Egwuatu.

* * *

The death is announced of Professor Karl Maybach, the German automotive engineer who designed diesel engines for locomotive, railcar, marine and road vehicle applications alike. Professor Maybach, who was 80, was the son of Wilhelm Maybach who directed the Daimler works after the death of its founder. The Maybach Motorenbau at Friedrichshafen was founded on the success of the five engines supplied to Count Zeppelin for his Graf Zeppelin. Professor Maybach retired from active affairs some years ago.

* * *

Mr. K. S. Martin, A.M.Inst.C.E., A.M.I.Mech.E., A.M.I.E.E., whose appointment as assistant civil engineer, London Midland Region, has been announced, was educated at Kings College, Wimbledon, and began his railway career as a pupil to the chief mechanical engineer of the former G.W.R. After gaining experience in South Wales Docks and at the locomotive drawing office at Swindon, he joined the former Southern Railway in 1938 in the chief engineer's department and remained until 1952. During this period Mr. Martin spent some years in the signal and telegraph, bridges, and outdoor machinery sections and at various times held appointments as works assistant, Redbridge works; assistant to divisional engineer, Eastleigh; production assistant to civil engineer, Waterloo; and assistant divisional engineer, Woking. In 1952 Mr. Martin transferred to the chief civil engineer's department at Euston as permanent way assistant. During the time Mr. Martin was at Euston he acted as departmental productivity assistant on the London Midland Regional productivity committee and also attended a three-months' course at the Administrative Staff College, Henley. In 1955 he was appointed district engineer at Derby North, the position he now leaves for his present appointment.



Mr. K. S. Martin

* * *

Mr. J. B. Y. Hill, at present deputy manager of national sales for the Dunlop Tyre Division has been promoted as national sales manager, in succession to Mr. W. A. Moens.

* * *

Mr. D. Hays has now taken up his duties as director, Dunlop Rubber Co. (Scotland), Limited. He has succeeded Sir William Sinclair who retired from the company on January 31, 1960, and will be responsible for the activities of Dunlop in Scotland.

* * *

The London Midland Region has announced the following appointments:

Mr. E. H. Baker, to be assistant chief mechanical and electrical engineer, Derby.

Mr. A. H. Nicholson, to be assistant regional establishment and staff officer, Euston.

Mr. F. W. Young, to be assistant to signal engineer (electrification), Euston.

* * *

Long-service awards were presented to 25 employees of the Devon General Omnibus and Touring Co., Limited, in Torquay. Five employees were awarded presentations in recognition of 40 years' service. Twenty members of the staff received 25-year service diplomas: Mr. W. M. Dravers (company chairman) made the presentations.

* * *

Mr. G. R. Brook, at present assistant secretary of the Western and Southern National Omnibus Companies, has been appointed secretary of Cumberland Motor Services, Limited, with effect from March 1. Mr. Brook started his service in the Tilling Group in 1950 as assistant to the accountant of the West Yorkshire Road Car Co., Limited.

* * *

The council of the Institution of Mechanical Engineers proposes to award in 1960 a research scholarship in the application of aluminium in mechanical engineering. The scholarship is being donated by the Aluminium Development Association; its value is £650 per annum and it will be tenable for two years, with the possibility of extension for a third year.

* * *

F. Perkins, Limited, has formed an overseas manufacturing operations division to investigate, organise and give advice on overseas manufacturing projects. Head of the new division, which will include the company's overseas manufacturing department, is Mr. K. E. Woollatt, director of administration, who now becomes director of overseas manufacturing operations.

* * *

Mr. J. F. Perry has been appointed chairman of the Fluidrive Engineering Co., Limited, in succession to Mr. Harold Sinclair, who has retired from the board to concern himself more fully with the work of associated companies. Mr. Perry was formerly managing director of the Metropolitan-Vickers Electrical Export Co., Limited, and a director of A. E. I. (Overseas), Limited.

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OFFICIAL NOTICES

TENDER INQUIRY NO. SE.140

THE office of Indian Supply Mission, 2536 Massachussetts Avenue, N.W. Washington 8 D.C., United States of America, invites tenders for the following:

"FOR THE SUPPLY OF SIDE BOOM TRACTOR (INDUSTRIAL TRACTOR FOR PULLING TRAILERS—MAX. LOAD 7 TONS TO LIFT 20 FT. LONG PIPES TO 10 FT. HEIGHT). REQUESTED BY NEYVELI LIGNITE CORPORATION, LIMITED, MADRAS, INDIA."

Tender documents, etc., relative to the above can be obtained from the Co-ordination Branch, India Store Department, Bromyard Avenue, Acton, W.3, at a cost of 14s. 3d. per tender, and is not refundable. Tenders are to be returned direct to India Supply Mission, 2536 Massachussetts Avenue, N.W. Washington 8 D.C., United States of America, so as to reach them by March 31, 1960.

Specimen copy of the above inquiry can be seen at India Store Department, Vehicles Branch, Bromyard Avenue, Acton, W.3, under the following reference: S.3935/59/HEA/VEH.

THE NORTHERN GENERAL TRANSPORT COMPANY, LIMITED

TECHNICAL ASSISTANT ENGINEER

THE Northern General Transport Company, Limited, which, with its subsidiaries, operates some 950 buses and coaches on stage carriage and express services, excursions and private hire, also extended tours in the U.K. and on the Continent, invites applications from those suitably qualified for the position of Technical Assistant Engineer.

The salary paid will be in accordance with the qualifications and experience of the successful applicant.

Applications endorsed "Technical Assistant Engineer" will be treated as confidential and should be addressed to the General Manager of the Company at 117 Queen Street, Gateshead, 8, giving full details of qualifications and experience but with a front cover sheet, showing (1) name and address, (2) age, (3) education, (4) training, (5) concise summary of previous appointments arranged in chronological order, (6) date available if appointed, to reach him not later than March 14, 1960.

IMPORTANT CONTRACTS

Future for the Rotodyne

FOLLOWING the announcement last week that all the aviation interests of Fairey Aviation Company had been acquired by Westland Aircraft, Limited, a contract valued at £4 million has now been placed by the Government with Westland for further development of the Fairey Rotodyne vertical-take-off air liner. Announcing the contract in the House of Commons on Monday, Mr. Duncan Sandys, Minister of Aviation, said he had been given an assurance by the Westland company that it would go ahead with the Rotodyne programme, which had been in the balance awaiting additional financial backing.

New Dredger for Humber Ports

British Transport Docks has ordered a new twin-screw diesel-propelled suction dredger from Fleming and Ferguson, Limited, Paisley, for its dredging fleet at the Humber Ports. It will be used initially for dredging the entrances to Hull Docks.

Teleflex at Panhard Factory

Teleflex Products, Limited, Basildon, has recently carried out an installation of its heavy-duty dual-direction chain creeper conveyor in the Panhard vehicle factory in Paris. The conveyor, which will be used to carry Citroen car and van bodies through the stoving and spraying processes, was designed and built by the Teleflex company in Paris.

Scottish Region Contracts

The Scottish Region of British Railways has placed the following contracts:

R. H. Neal and Co., Limited, London, for three mobile cranes.
Bone, Connell and Baxters, Limited, Glasgow, for steel superstructure for bridge at Auchinleck.
James Miller and Partners, Edinburgh, for reconstruction of bridge at Hailhill Road, Shettleston.
Kinnear, Moodie and Co., Limited, Glasgow, for renewal of superstructure of bridge at Blair Road, Blairhill.

E.M.I. Television Unit for Hungary

E.M.I. Electronics, Limited, has received an order from Elektroimpex, Budapest, on behalf of the Hungarian Broadcasting Authority for one of the company's latest television outside broadcast units. The comprehensive equipment is carried on a Strachan-bodied 7-ton Bedford chassis. The order was obtained in co-operation with E.M.I.'s export representative in Eastern Europe, Ian Stach, Limited, London.

London Midland Region Contracts

The London Midland Region of British Railways announces the following contracts:

Thomas Fletcher and Co., Limited, Mansfield, for reconstruction and strengthening of four bridges over Grand Union Canal on London Euston and Rugby Midland line.
Butterley Co., Limited, Butterley, for steelwork for bridge on Macclesfield and Colwich line.
Norwest Construction Co., Limited, Liverpool, 21, for construction for the Ministry of Transport of a bridge near Holmes Chapel, carrying the Crewe—Stockport line over the Birmingham—Preston motorway.
C. A. Horton, Limited, Brierley Hill, for construction for the Ministry of Transport of a new bridge at North Ashton carrying the Lancashire Union line over the Birmingham—Preston motorway.

British Petroleum Equipment to Mexico

Mr. G. V. Sims, director of the Council of British Manufacturers of Petroleum Equipment and managing director of British Oil Equipment Credits, Limited, was due to leave for the United States and Mexico on February 19 to negotiate the extension of the present financing agreement with Petroleos Mexicanos (PEMEX). Firm orders to the value of £2½ million have already been placed against the original financing agreement, which extended credit to £3½ million. A mission formed by the council is also to visit Argentina in March to promote sales there of British petroleum equipment.

New Orders for Buses

Southdown Motor Services, Limited, has placed orders with Leyland Motors, Limited, for 50 Titan double-deck and 30 Leopard single-deck bus chassis, valued at over £230,000. Operating over 800 Leyland buses and coaches, Southdown is at present taking delivery of another 15 Leyland Tiger Cub coaches with 37-seat bodywork and 20 Leyland Titans with 69-seat bodies. The double-deckers have driver-controlled front-entrance doors. An order for 10 Titan chassis has also been placed by Bournemouth Corporation, while the Gateshead and District Omnibus Company had ordered six rear-engined Atlantean chassis.

North Eastern Region Contracts

Recent contracts placed by the North Eastern Region of British Railways include:

Etchells, Congdon and Muir, Limited, Manchester, 4, for a 10-passenger lift at Newcastle.
Westinghouse Brake and Signal Co., Limited, London, for a control console and associated equipment for the new power signalbox at Gateshead.
Steels Engineering, Limited, Manchester, for two 10-ton diesel-electric rail cranes.
Petbow, Limited, Sandwich, for electrical equipment for Pelaw Signalbox and for the East Coast main line resignalling scheme at Alnmouth and Tweedmouth.
Shelvoke and Drewry, Limited, Letchworth, for an 8-ton fork-lift truck for Hull Neptune Street goods warehouse.

New Eastern Region Contracts

The Eastern Region of British Railways announces the following contracts:

Braithwaite and Co., Structural, Limited, Great Bookham, for reconstruction of portion of superstructure of bridge over River Doe Lea between Staveley Town (closed) and Clowne and Barlborough.
Ericsson Telephones, Limited, London, W.C.2, for supply and installation of complete train describer system between Hackney Downs, Seven Sisters, Enfield Town and Chingford.
Samuel Butler and Co., Limited, Stanningley, for reconstruction of Swaithe Bridge over main lines, between Wombwell West and Barnsley Courthouse.
George E. Taylor and Co. (London), Limited, London, S.E.1, for electric lighting and power installation at Southbury, Turkey Street and Theobolds Grove stations.
Pitchers, Limited, London, N.7, for standby powerhouse at Upminster and alterations to existing signalbox and construction of new relay room at Upminster East.

Experimental Tunnelling for New Tube

As we recorded last week, London Transport has placed two contracts for experimental tunnelling in the Finsbury Park area. The twin tunnel of about one mile in length is being constructed to enable experience to be gained in the use of new methods of tunnel lining and construction in connection with tube railways. No complete new tube across London has been built for some 50 years and the experimental lengths of tunnel will provide information on the suitability of various construction methods for use in any future tube building. The tunnels are being constructed on the alignment of the proposed Victoria Line at Finsbury Park. If the Government sanctions the finance of the Victoria Line, this section of tunnelling would be incorporated in it. The contractors involved are Kinnear Moodie and Co., Limited, for a length of concrete-lined tunnel from Finsbury Park to Manor House, and Edmund Nuttall Sons and Co. (London), Limited, for a length of cast-iron lined tunnel from Netherton Road (Tottenham) to Manor House.

SHIPPING and SHIPBUILDING

Italia Line Replacements

ORDERS are to be placed by the Italia Line with home yards for two further liners for the American service. They will probably replace the 24,000-ton *Saturnia* and *Vulcania*, constructed in 1927 and 1928 respectively. On June 30, the new liner *Leonardo da Vinci* (32,000 tons gross), itself a replacement of the ill-fated *Andrea Doria*, will enter the New York service. The two ships now to be ordered will have a gross tonnage of about 36,000 and should have a cruising speed of 26 knots.

Union Steam Ship Colours

HULL colours of all the Union Steam Ship (New Zealand) cargo vessels will be changed from black and buff to the green hull, yellow band and white of the company's passenger vessels. It is felt that the crews would welcome the change and take a greater pride in the appearance of their vessels.

"Lochinvar" Back in Service

SOME indignation has been caused in the area by the reintroduction into service of the 1908 David MacBrayne steamer *Lochinvar*. She was withdrawn last November and it was understood that she was to be scrapped. Now she has reappeared, on the Oban—Tobermory service, her certificate having been renewed for two years. The chief complaint is of her seeming inability to keep to the schedule.

Building Problems in Japan

JAPANESE shipbuilders are to urge the Japanese Government to free imports of steel plates for shipbuilding as soon as possible. Such a move is considered necessary to bring down domestic prices for ship plates, at present at around 7,000 yen per ton higher than British shipbuilding steels. Japanese yards, it is stated, have received substantial export orders in recent weeks following the Government's decision to ease deferred payment terms on ship exports.

Conversion to Oil Cancelled

THE 39-year old vehicular ferry *A. B. Gowan* which operates between Jarrow and Howdon is not to be converted from coal to oil burning as had been contemplated. The ferry joint committee of Northumberland and Durham County Councils, which controls the service, has recommended this to the two county councils. The decision has already been accepted by Northumberland, and Durham is expected to follow suit shortly. Councillor P. Hepburn, a member of the Durham County Council, said that it was felt the change to oil should not take place in view of the existing difficulties of the coal industry. Consideration had also been given to the high cost of conversion, the age of the ferry, the limited period the vessel was expected to be in service and the improbability of recovering the amount on the sale.

Hull Charges Scheme

HULL Chamber of Commerce and Shipping decided on February 1 to ask for a further three months in which to consider the B.T.C. dock charges scheme for Hull. Mr. G. E. Sanderson, the president, said he hoped that a substantial measure of agreement would be reached between the Chamber and the B.T.C. before the matter went to the Transport Tribunal. At a recent meeting, the Traders Dock and Harbour Co-ordinating Committee at Hull decided to gain more information about the building up of the Commission's proposed target surplus for the port. In the meantime it had applied for an extension of time in which objections to the draft scheme could be lodged. At a previous meeting of the Chamber it was said that the new dock charges were 50 per cent above existing charges in some cases and that the B.T.C. was aiming at a £900,000 annual working surplus.

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FORTHCOMING EVENTS

Feb. 15.—Inst.T. (Sussex). F. A. White, "The Kent Coast Electrification." Arlington Hotel, Brighton. 6.30 p.m.
L.R.T.L. R. C. Sambourne, "Tramways in Torbay." Swarthmore Hall, Mutley, Plymouth. 7.30 p.m.
I.R.T.E. (East). J. E. Johnson, "Wear and Tear (Part 2)." Houldsworth Hall, Manchester. 7.30 p.m.
I.R.T.E. (Scottish). J. McCall, "Vehicle Maintenance—by Control Board." North British Hotel, Edinburgh. 7.30 p.m.

Feb. 16.—Inst.T. (Yorkshire). J. N. Stainthorpe, "Public Relations." Room 33, Railway H.Q. Offices, York. 7.15 p.m.
R.C.T.S. (Sheffield). J. Pegler, "Special Trains." Livesey Clegg House, Sheffield. 7.30 p.m.
I.T.A. T. H. Campbell Wardlaw, "Transport Law." R.S.A., John Adam Street, W.C.2. 6.30 p.m.
I.Loco.E. A. Gordon Wilson, "Trends in Transmission Design for Self-Propelled Diesel Railcars." 1 Birdcage Walk, S.W.1. 5.30 p.m.
Inst.T. (Humberside). J. L. Gregeen, "Refrigerated Transport." Chamber of Commerce and Shipping, Samman House, Bowlalley Lane, Hull. 7.30 p.m.
Inst.T. (Scottish). Brig. A. E. M. Walter, "European Transport Policies." Conference Room, 46 Bath Street, Glasgow. 6 p.m.
Inst.C.E. A. E. Underwood, J. D. Norfolk and J. N. Eathorne, "The Design and Construction of the Queen Elizabeth Graving Dock at Falmouth." Great George Street, S.W.1. 5.30 p.m.
I.R.T.E. (Eastern). A. Enticknap, "The Future of Road Transport." Refectory, Peterscourt Office, F. Perkins, Limited, Peterborough. 7 p.m.
I.R.T.E. (N.E.). J. L. B. Crane, "Unusual Types of Trailer Suspension including Air Suspension." Three Tuns Hotel, Durham City. 7.30 p.m.

Feb. 17.—R.S.A. S. A. Claydon, "Some Aspects of the Short Sea Trade." London School of Economics, Houghton Street, Aldwych, W.C.2. 6.15 p.m.
P.R.D.G. J. W. Dedman, "Barking." Eastfield Road, Peterborough. 6.45 p.m.
Inst.P. Annual dinner. Grosvenor House, W.1.
I.Mech.E. (Auto). E. A. Watson, "Electrical Equipment of the Automobile." 1 Birdcage Walk, S.W.1. 6 p.m.
Rly.C. Informal meeting. 320 High Holborn, W.C.1. 7 p.m.
O.S. (Midland). J. K. D. Blair, "Aspects of Transport in Scotland." Crown Hotel, Broad Street, Birmingham.
Inst.T. (N. Ireland). Annual dinner and visit of president. Belfast Castle, Belfast. 6.30 p.m.

Feb. 18.—D.E.U.A. P. J. C. Teece, "Foundations and Mountings for Diesel Engines." 76 Mark Lane, E.C.3. 2.30 p.m.
Inst.T. (Bournemouth-Poole). F. Greenen, "Town Planning and Transport." Town Hall, Bournemouth. 6 p.m.
Inst.T. (Irish). Annual dinner and visit of president. United Services Club, Dublin.
I.R.T.E. (Met.). J. E. Johnson, "Wear and Tear (Part 2)." R.S.A., John Adam Street, W.C.2. 6.30 p.m.
I.R.T.E. (Yorkhire). R. C. Nicholls, "Is Lubrication Necessary?" Mechanics Institute, Nottingham. 7.30 p.m.
W.R.L.L.D.S. A. E. Flaxman, "Traffic Problems and Progress." H.Q. Staff Dining Club, Bishops Bridge Road, W.2. 5.45 p.m.

Feb. 19.—Inst.H.E. (N.E.). P. R. S. Holmstrom, "The Design of and Installation of Corrugated Metal Structures." Municipal Buildings, Middlesbrough. 7 p.m.
I.Nav. Dr. J. G. Porter, "Space Navigation." 1 Kensington Gore, S.W.7. 5.15 p.m.
Inst.T. (Swindon). G. J. Busby, "Goods Road Transport." Engineering Society Rooms, Swindon. 7.15 p.m.
Inst.T. (Tees-side). H. H. Crow, "Liquids Transport by Road Tank Wagon." Cleveland Scientific and Technical Institution, Middlesbrough. 6.30 p.m.

Feb. 20.—R.C.T.S. (S. of England). Debate with members of Railway Conversion League. C.B.B. Employees Club, Palmerston Road, Boscombe. 6.30 p.m.
R.C.T.S. (North E.) Branch annual dinner in Newcastle upon Tyne.

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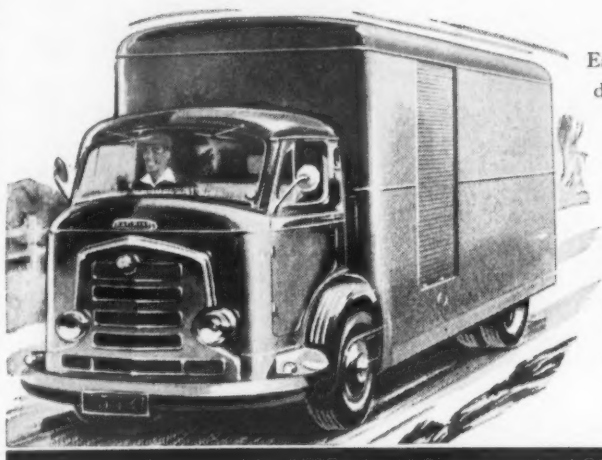

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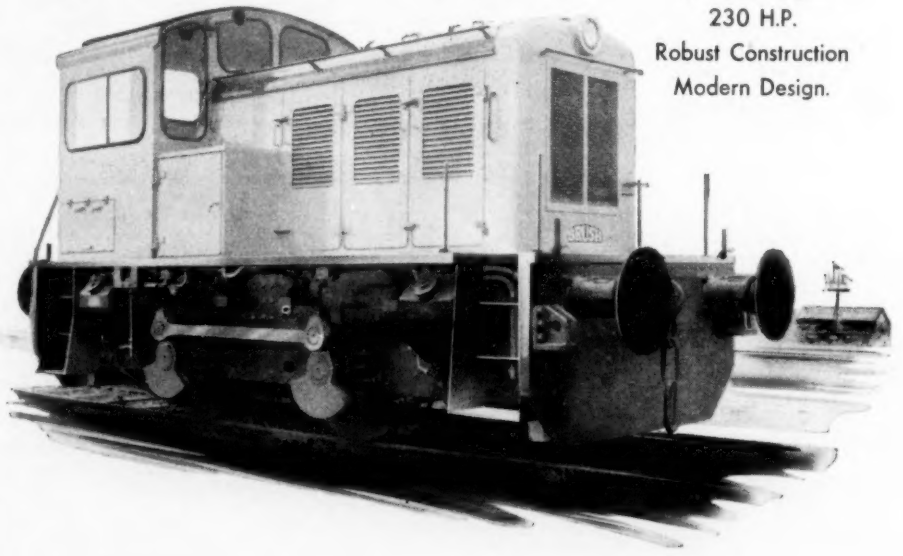

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Printed by Odhams (Watford) Limited, St. Albans Road, Watford, Herts, for and published by Modern Transport Publishing Co., Limited, Russell Court, 3-16 Woburn Place, London, W.C.1.